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2011 f. 54

Elisa Roſsel

EXERCISES

ON THE

GLOBES;

INTERSPERSED WITH SOME

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BY WILLIAM BUTLER,

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PREFACE

TO

THE FIRST EDITION.

THE ſubſequent little Work having been originally compiled, and being ſtill chiefly intended, for private uſe, it is almoſt unneceſſary to aſſign the motives for its publication; but, as it may poſſibly be aſked, why I have augmented the number of books on this ſubject, ſome reaſons ſhall be ſtated.

I had been taught by long experience, that much general information might be communicated to my pupils through the channel of my profeſſional occupation, as a teacher of WRITING and of ARITHMETIC; and this, indeed, is a circumſtance which I have already

explained at ſome length in the pref
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that it perfectly anſwered my preconcei
ideas on the ſubject. It not only incre
the pupil's ſtock of knowledge, but, by
diverſity, rendered the uſe of the globes
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ſcription, I then determined to make a
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commit the whole to the preſs, though I
retained my primary intention of confining
ſale almoſt entirely to my own immedi
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only has been printed as would, it might
rationally apprehended, be adequate to t
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or the utility of the work, obtain for it ſomewhat of a general circulation, a future editio ſhall contain a ſufficient number of copie to anſwer all demands.

As this Compendium may perhaps fall int the hands of perſons little accuſtomed to thi pleaſing department of inſtruction, I may without impropriety, obſerve, that the pupils beſide working each problem agreeably to th rule attached to it, ſhould be deſired, when i contains places, conciſely to ſtate ſuch particulars relating to them as are to be foun in a well-ſelected Gazetteer, together wit ſuch anecdotes from biography, and ſuch fact from natural hiſtory and the annals of nations as the inſtructor has been accuſtomed to deliver in the courſe of his geographical lectures Thus may be acquired an extenſive knowledg of places, and of their relative ſituations, wit reſpect to London and to each other, and promptitude in diſcovering them on the globe important attainments, of which young perſo can rarely be ſaid to be poſſeſſed.

I

explained at ſome length in the prefaces to AN INTRODUCTION TO ARITHMETIC, and to A COLLECTION OF ARITHMETICAL QUESTIONS, which were publiſhed ſome time ſince. That another branch of my ſtated employment might be made ſubſervient to the ſame beneficial purpoſes, did in conſequence occur to me; I accordingly drew up a part of the following ſmall Manual, and ſoon had the pleaſure of finding that it perfectly anſwered my preconceived ideas on the ſubject. It not only increaſed the pupil's ſtock of knowledge, but, by its diverſity, rendered the uſe of the globes one of the moſt delightful juvenile ſtudies. To accelerate the advancement of the ſcholar, and relieve myſelf from the toil of frequent tranſcription, I then determined to make a few additions to what I had at firſt written, and commit the whole to the preſs, though I ſtill retained my primary intention of confining its ſale almoſt entirely to my own immediate connexions. On this account, ſuch a number only has been printed as would, it might be rationally apprehended, be adequate to this purpoſe. Should the partiality of friendſhip, or the utility of the work, obtain for it ſomewhat of a general circulation, a future edition ſhall contain a ſufficient number of copies to anſwer all demands.

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In thoſe problems which include days of the month, ſuch have been ſelected, though undoubtedly not always with equal felicity of choice, as deſerve the notice of the learner on account of ſome memorable or intereſting occurrence which happened on thoſe days. The principal particulars of theſe occurrences (for which a reference muſt be made to the CHRONOLOGICAL TABLE) the pupils ſhould, at the concluſion of each operation, be alſo enjoined to recite, in order that their progreſs in the intereſting paths of biography and hiſtory may become more rapid; paths in which, it may be expected, they will gain at once habits of virtue and vigour of intellect. Of the Chronological Table, an advantageous uſe may likewiſe be made, not only when it is applied as above directed to the immediate elucidation of particular problems on the globes, but as the ſeveral months and days therein mentioned ſucceed each other in the ſtream of time*.

---

* To thoſe who mean to avail themſelves of this part of the plan in its full extent, the author begs leave to recommend the enlarged edition of his Chronological Table, a new edition of which is now in the preſs.

The ſcholars, while performing the problems of the celeſtial globe, ſhould be directed to give a brief account of the ſeveral conſtellations as they occur. To facilitate this part of the plan, they ſhould, at ſtated periods, recite to the inſtructor (the number being varied according to the ſize and capacity of the claſs) a dozen or two of the words from the INDEX, which was deſigned as well for that purpoſe as for a direction to the pages where the various articles of miſcellaneous information are found. I may be permitted to add, that ſuch of my pupils as have made any conſiderable proficiency in the uſe of the pencil, have, in the copying of the conſtellations from drawings which I have put into their hands, experienced not only great advantage but much pleaſure. As the chief ſtars, and their characters, muſt at the ſame time be inſerted, the ſeveral figures on the celeſtial ſphere will be thus familiarized to the eye, and the pupils will attain no ſmall degree of quickneſs in diſcovering them, as they lie ſcattered on the ſurface of the globe. This promptitude in diſtinguiſhing will, in ſome meaſure at leaſt, be transferred to the heavens;

and the names and ſituations of the moſt celebrated conſtellations, and the moſt brilliant ſingle ſtars which are viſible in our hemiſphere, be referred to without embarraſſment and without miſtake.

That children learn nothing effectually, except by frequency of repetition, every one concerned in the buſineſs of education is fully apprized. A great variety of examples, illuſtrative of both the globes, I have therefore ſupplied; and, in conſequence, indulge the hope, that, provided the directions I have ſuggeſted are followed, not only much general knowledge may be incidentally acquired, but an acquaintance with the moſt uſeful problems may be indelibly imprinted on the memory.

If it ſhould be thought that I am too anxious and too ſanguine about the ſucceſs of ſuch a trifling publication, I may plead, as an excuſe, the great importance of my object, and expatiate on the powerful influence of female charms, which, when exerted under the guidance of ſuperior virtue, tend more to the advancement of excellence among men than any other human incentive. According as they are directed or employed, do they not ſhape man into the worſt or beſt of beings? Every thing connected with female education I conſequently regard as of the utmoſt importance, not only to the preſent, but to future generations. That female charms, however, may gain a permanent aſcendancy, thoſe favoured with them muſt not only poſſeſs beauty, but acquire knowledge; and with exterior accompliſhments muſt be blended the culture of the mind and of the heart. Their combined influence would, indeed, be irreſiſtible. "A ſenſible man," ſays an elegant writer, "requires ſome powers of mind to "fix thoſe impreſſions which may have been "originally received through the medium of "the ſenſes. Whether women are deſirous "to ſecure a permanent intereſt in the hearts "of men after the charms of youth and "beauty are faded, or whether they wiſh to "extend the circle of their own rational gra-"tifications, they will moſt certainly effect "their purpoſe by cultivating the ſame men-"tal and ſocial talents by which the moſt

"enlightened men engage the reſpect and
"eſteem of their fellow-citizens, and by
"qualifying themſelves to become inſtructive,
"amiable, and intereſting companions. It
"ought to be an additional inducement with
"women to the improvement of their minds,
"that the welfare of ſociety materially de-
"pends on their conduct: if they were to
"ſet the example of manners and attain-
"ments truly civilized, ignorance and barba-
"riſm would be chaſed out of the world*."

Of the materials of the following Work, ſome were collected previouſly to my entertaining any idea of publication; and it is incumbent on me to ſtate, that the language of the authors whom I at different times conſulted, has been occaſionally employed in the preſent performance. Since a few tautologies or even miſtakes (beſides thoſe noticed in the corrections) may perhaps be detected, I muſt obſerve, in extenuation, that it was written and ſent to the preſs in fragments, and at diſtant intervals of time, amidſt the inceſſant duties of a very laborious profeſſion, which entirely excludes the poſſibility of regularity of application. I therefore conclude, by throwing myſelf on the indulgence of my friends, hoping that the failures in the execution may be pardoned on account of the merit of the deſign, the object of which was to produce a more uſeful, a more comprehenſive, and a more attractive practical Treatiſe on the Uſe of the Globes than any that has hitherto appeared.

---

* Mr. Malkin's Eſſays.

WILLIAM BUTLER.

Oxford-Court, Cannon-Street,
Auguſt 1, 1798.

ADVERTISEMENT

TO

THE SECOND EDITION.

THE Author would ſubject himſelf to the imputation of ingratitude, if he forbore to return moſt ſincere and hearty thanks to his numerous friends for the lively intereſt that they manifeſted in promoting the circulation of the former impreſſion, which was exhauſted within a few months after its appearance at the tribunal of public opinion.

As the work was never advertiſed, however, Mr. B. feels inclined to attribute its rapid ſale and flattering reception, in the firſt inſtance, to the candid and liberal manner in which it was early noticed by a Monthly

Critic, whoſe opinion was delivered in terms which ſo decidedly ſanction the Author's endeavours, that he cannot deny himſelf the gratification of tranſcribing a few paſſages from the LADY'S MONTHLY MUSEUM, vol. i. page 481, &c.

" Mr. BUTLER has, on former occaſions,
" proved, that he has been no idle attendant
" on the riſing generation. He has, at leaſt,
" the merit of having ſtrewed over with
" flowers the ſteep and thorny path of in-
" ſtruction.

" This volume contains a greater number
" of problems than we remember to have
" ſeen before collected; and the examples
" by which each problem is illuſtrated are
" many and various. Indeed, a paucity of
" examples, in elementary works of this na-
" ture, muſt render more difficult, and leſs
" certain, the improvement of the young
" ſtudent; for (as Mr. B. remarks) ' chil-
" dren learn nothing effectually, except by
" frequency of repetition.'

"Our author ſuggeſts, to thoſe who may "uſe this book, a method whereby its purpoſe may be moſt effectually anſwered; "and aſſerts, that, if the directions laid "down be followed, not only much general "knowledge will be incidentally acquired, "but an acquaintance with the moſt uſeful "problems be indelibly imprinted on the "memory.

"In the part of the work that treats of "the Celeſtial Globe, the remarks of poets, "mythologiſts, and hiſtorians, concerning "the various conſtellations, are introduced, "and, ſometimes, a brief ſketch of the natural hiſtory of the ſeveral animals which "they repreſent; together with ſome very "pleaſing anecdotes.—If our limits would "allow us, we ſhould have pleaſure in tranſcribing ſome extracts from this part of "the volume.

"It appears rather extraordinary to us, "that a plan of inſtruction ſo well calculated "to gratify that curioſity which the ſcience "itſelf muſt raiſe in youthful minds, has

" not before occurred to writers on this " ſubject; as, without ſome ſuch explana- " tions, the various figures on the Celeſtial " Globe muſt be wholly unintereſting, becauſe " perfectly unintelligible. The introduction " of the Greek Alphabet, with the names " and powers of the letters, though but a " trivial circumſtance in itſelf, is a happy " thought, as it enables the pupil readily to " name the ſeveral ſtars by the characters " aſſigned to them by aſtronomers.

" The idea, alſo, of introducing into ſuch " of the problems as include days of the " month, ſuch days as have been marked by " ſome memorable event, is not only novel " in itſelf, but ſhews, that, throughout his " work, the author has kept in view the " purpoſe of imparting general information, " and of familiariſing his pupils to the ' in- " tereſting paths of biography and hiſtory— " paths in which, it may be expected, they " will gain at once habits of virtue and " vigour of intellect.'

" At the end of the work (if we may uſe

“ that expreſſion) is a Chronological
“ of near 100 pages, compriſing a
“ hiſtorical and biographical info
“ under the ſeveral days of the year
“ to in the problems. This we co
“ a valuable portion of the work; and
“ *it might not even be a deſirable thing t*
“ *this article, and make a detached publ*
“ *it*, is for Mr. B. to conſider.

“ To conclude: though the Tre
“ Dr. Watts, of Coſtard, of Bran
“ ſome others on this ſubject, conta
“ ſcientific information, we do not
“ to recommend this volume; the c
“ which, the author tells us, was, t
“ a more uſeful, comprehenſive, an
“ tive Practical Treatiſe on the U
“ Globes, than any that had hith
“ peared: and, in our opinion, there
“ writers on the ſubject of practica
“ tion, to whom our female offsp
“ under greater obligations than to th
“ of the preſent work.”

The following are extracted from the accounts given of this work by ſome of the other Literary Journals.

" Of all philoſophical inſtruments the GLOBE is, perhaps, the neateſt and moſt impreſſive. Its circular form, the diviſion of its ſurface by ſuch a number of regular lines, and its revolution on its axis, ſerve to ſhew the ingenuity of man after an intereſting manner. The preſent volume, by a ſeries of eaſy problems, profeſſes to lead the pupil into a thorough acquaintance with the globe on which he lives; and alſo to make him familiar with the heavens, by which our earth is ſo gloriouſly and delightfully encircled.

" Mr. BUTLER has happily ſucceeded in his endeavours to render plain the firſt elements of geography and aſtronomy. His definitions are clear, and his problems are introductory to each other; ſo that the ſolution of them may be effected with a greater degree of facility.

" The miſcellaneous notes ſcattered throughout the volume, are extremely valuable; they contain much information, and will give youth a pleaſing inſight into the propriety of the manner of the ſeveral conſtellations into which the ſtars are divided. Without ſuch a knowledge the Heavens ſeem confuſed; but when we have attended to the real origin of the diviſions, we ſhall find allude to ſome of the moſt important inc the page of ancient hiſtory. In this poin the firmament reſembles a mighty F where the eye of ſcience diſcerns traces o which, otherwiſe, would have for ever cealed in the folds of obſcurity."

Monthly Viſitor, Vol. xi

"In a judicious manner this Author as in his former productions, contrived amuſement with inſtruction. The Prob more numerous than in any book of the l we have before ſeen, and the definit preciſe and eaſy of comprehenſion. B manner that we think peculiar to himſ BUTLER has contrived to interſperſe miſcellaneous information among the parts of his work, as muſt neceſſarily cult mind and enlarge the ideas of the fair general ſubjects, while ſhe ſeems to be geography only. To the main work i 'A Brief Chronological Table of re Events that have occurred on every Da Year mentioned in the Problems.'

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London Review, European Magazine, for 1801, p. 115.

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ADDRESS

ADDRESS TO THE PUBLIC.

MR. BUTLER, Teacher of WRITING, ACCOUNTS, and GEOGRAPHY, reſpectfully informs his friends and the public, that having frequently found himſelf prevented by prior engagements from attending ladies ſchools and private families which had honoured him with applications for that purpoſe, he has engaged as partner, his ſon-in-law Mr. THOMAS BOURN, Jun. of Mare-Street, Hackney. This connection will not only better enable Mr. B. to avail himſelf of the kind partiality of his friends, but, by introducing to their acquaintance, will recommend to their protection a much eſteemed friend, of exemplary moral conduct, great profeſſional ability, and poſſeſſing the happy talent of communicating inſtruction, united to indefatigable aſſiduity and zeal in the diſcharge of his engagements.

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EXERCISE

EXERCISES
ON THE
GLOBES.

OF THE
TERRESTRIAL GLOBE.

A GLOBE. A globe, or ſphere, is a round ſolid body, every part of whoſe ſurface quidiſtant from a point in the middle, called centre. Artificial globes * are of two kinds, terreſtrial

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[*] The firſt perſon who conſtructed a globe, or ſphere, is l to have been ANAXIMANDER, the Mileſian † philoſo-er, who was born 610 years B. C. He was alſo the uted inventor of maps and dials. Maps were firſt brought o England in 1489 in the reign of Henry VII. by rtholomew Columbus, to illuſtrate his brother's theory of weſtern continent, to that monarch. The firſt exact map England was drawn by George Lilly, ſon of the famous mmarian; and publiſhed in the year 1520.

Globes are made of different materials, viz. ſilver, braſs, per, plaſter, &c. Thoſe commonly uſed are fabricated of

[†] Miletus gave birth alſo to Thales, Anaximenes, Hecatæus, Timo-us the muſician, and Pittacus one of the ſeven wiſe men. It was the pital of Ionia in Aſia Minor, and ſeated near the ſea. See Wilkinſon's las Claſſica.

terreſtrial and celeſtial. The terreſtri
exhibits a repreſentation of the earth, h

the two latter articles. Globes have alſo been conſ
various magnitudes. The largeſt in the world are,
of Gottorp; two in the library of the late king of
and one in Pembroke-College, Cambridge.

The globe of Gottorp, in the Academy of Sciences at
burgh, is, ſays Mr. Coxe, a large concave ſphere, eleven
in diameter, containing a table, and ſeats for twelve p
The inſide repreſents the viſible ſurface of the heaven
ſtars and conſtellations are diſtinguiſhed, according to the
ſpective magnitudes, by gilded nails. It is ſet to the mer
of Peterſburgh; and being turned by means of a curious
of mechaniſm, exhibits the true poſition of the ſtars,
riſing and ſetting. The outſide is a terreſtrial globe.
machine is called the globe of Gottorp, from the original
of that name, which, at the expence of Frederick III. D
of Holſtein, was erected at Gottorp by Andrew Buſh ‡, un
the direction of Adam Olearius. It was planned after a deſ
found among the papers of the celebrated Tycho Brahe, a
was preſented by Frederic IV. King of Denmark, to Peter th
Great, who ſaw it in 1713, and expreſſed much ſatisfactio
at its curious ſtructure and mechaniſm. The carriage of ſ
cumbrous a machine from Gottorp to Peterſburgh was attende
with great expence and labour. It was conducted over th
ſnow upon rollers and ſledges to Riga, the foreſts being i
parts cleared; and from Riga it was ſent by ſea to the ne
metropolis. This ſphere was afterwards erected in the build
ing of the Academy of ſciences, and was burnt in 175
From the iron plates or carcaſe which remained, the preſen
globe was conſtructed, with conſiderable additions, and place
in its preſent poſition, which is a detached building, in ord
to preſerve it from fire. It is exactly of the ſame ſi
with the original; and is far preferable, becauſe all th
modern improvements in geography and aſtronomy have bee
added. The meridian and horizon were formed by Scott, a
Engliſh mechanic.

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† Stæhlin, in his Original Anecdotes of Peter the Great, ſays, th
it is eleven feet and a half in diameter.

‡ Stæhlin calls him Adam Bouſch.

ſurface of land and ſea delineated upon it, ir natural form, order, and ſituation. The celeſtial

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704, two globes were made for Cardinal d'Eſtrees, by lli, a Venetian, and depoſited in one of the lower ıf the king's library at Paris §. Theſe, ſome have aſ- are as large as that of Gottorp; while others maintain trary. Be this as it may, they are certainly inferior n one reſpect. The former, together, repreſent the l and terreſtrial globes; whereas in that of Ruſſia the bes are united. Its convex ſurface repreſents the earth, concavity the heavenly conſtellations.

preceding aſtronomical machines, however, are far inin ſize to one of the ſame kind erected at Pembroke-, in the univerſity of Cambridge, by the late Dr. Long, of that ſociety, which is thus deſcribed by the Doctor :

have, in a room lately built in Pembroke-Hall, erected ere of eighteen feet diameter, wherein thirty perſons ſit conveniently; the entrance into it is over the South by ſix ſteps: the frame of the ſphere conſiſts of a ber of iron meridians, not complete ſemicircles, the ern ends of which are ſcrewed to a large round plate raſs, with a hole in the centre of it; through this , from a beam in the ceiling, comes the North pole, ınd iron rod, about three inches long, and ſupports the r parts of the ſphere to its proper elevation for the ude of Cambridge; the lower part of the ſphere, ſo h of it as is inviſible in England, is cut off; and the r or Southern ends of the meridians, or truncated circles, terminate on, and are ſcrewed down to, a g circle of oak, of about thirteen feet diameter, h, when the ſphere is put into motion, runs upon rollers of lignum vitæ, in the manner that the tops me wind-mills are made to turn round. Upon the meridians is fixed a zodiac of tin painted blue, whereon ecliptic and heliocentric orbits of the planets are drawn, the conſtellations and ſtars traced: the great and little and Draco are already painted in their places round North pole; the reſt of the conſtellations are propoſed to w: the whole is turned round with a ſmall winch,

pleaſant touriſt who ſaw theſe immenſe globes in 1802, ſays they ſtructed in 1683. See Mont. Mag. for May 1802, p. 311.

celeſtial globe is a repreſentation of the heavens, having the fixed ſtars deſcribed upon it in their

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“ with as little labour as it takes to wind up a jack, though the weight of the iron, tin, and wooden circle is about a thouſand pounds. When it is made uſe of, a planetarium will be placed in the middle thereof. The whole, with the floor, is well ſupported by a frame of large timber.”

Thus far Dr. Long, before this curious piece of mechaniſm was perfected. Since the above was written, the ſphere has been completely finiſhed; all the conſtellations and ſtars of the Northern hemiſphere, viſible at Cambridge, are painted in their proper places upon plates of iron joined together, which form one concave ſurface.

The moſt popular dimenſions of globes for common uſe, are thoſe of nine, twelve, or eighteen inches diameter. Of this laſt ſize Mr. Bardin, of Saliſbury-Square, Fleet-Street, London, has juſt finiſhed a pair in a ſtyle of uncommon beauty and elegance. The celeſtial globe is dedicated to Dr. Maſkelyne, aſtronomer royal, and contains the poſitions of near 6,000 ſtars, cluſters, nebulæ, and planetary nebulæ, computed and correctly laid down for the year 1800, from the obſervations of Dr. Maſkelyne, Dr. Herſchell, the Rev. Mr. Wollaſton, &c. &c. The terreſtrial globe is dedicated to Sir Joſeph Banks, preſident of the Royal Society, and contains all the lateſt diſcoveries and communications from the moſt correct and authentic obſervations and ſurveys to the preſent time, by Captain Cook, and more recent navigators, engraved from an accurate drawing by Mr. Arrowſmith. The ſuperior correctneſs and elegance of theſe globes to any that have been hitherto publiſhed in this country, induce me to recommend them in the ſtrongeſt terms to thoſe who may be diſpoſed to purchaſe globes of this ſize. The price of the pair is from ſeven to ſeventeen guineas, according to the manner in which they are mounted. Mr. Bardin has likewiſe completed a pair of twelve-inch globes which correſpond in accuracy of delineation and neatneſs of execution with thoſe of eighteen inches diameter; forming together a combination of unexampled excellence in this particular department of ſcience, which is alike reputable to the ingenious artiſt and beneficial to the public. The price is from three guineas and a half to ſix guineas, according to the mounting. Mr. Bardin is alſo preparing, on the ſame plan, new plates for globes of nine inches diameter.

natural order and ſituation; drawn, indeed, upon a convex ſurface, whereas their natural appearance is in a concave one. But, to obviate this acknowledged incongruity, we have only to conſider, that if the globe were tranſparent, an eye placed at the centre would behold the ſtars as they actually appear in the firmament. To each globe belong various appendages or circles, ſome of which are real, and others imaginary.

2. Axis. This is an imaginary line, ſuppoſed to be drawn through the centre of the earth, and is repreſented by the wire upon which the globe turns. The revolution of the ſphere upon this ſpindle, ſhews the manner in which the earth performs its diurnal rotation from *Weſt* to *Eaſt*:

> She from the *Weſt* her ſilent courſe advances
> With inoffenſive pace, that ſpinning ſleeps
> On her ſoft axle, while ſhe paces even,
> And bears us ſoft with the ſmooth air along*.
> Milton.

From this circumſtance ariſes the *apparent* diurnal motion of all the heavenly bodies from *Eaſt* to *Weſt*. This daily motion of the earth is the occaſion of day and night; and its annual motion round the ſun (in popular language called the ſun's courſe in the ecliptic †) cauſes the beautiful diverſity of ſeaſons:

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* Philolaus, a native of Crotona, and the ſcholar of Pythagoras, firſt taught publicly the diurnal motion of the earth round its axis, and its annual motion round the ſun. Philolaus flouriſhed about 374 years B. C. Crotona, ſometimes called Croto and Croton, was ſituated on the ſouth-weſt part of the bay of Tarentum, in Italy, in the latitude of about 39 Deg. See Wilkinſon's Atlas Claſſica. The inhabitants were excellent warriors, and great wreſtlers; particularly Milo. See Arith. Queſt.

† See Ecliptic, Art. 6.

The earth's rotation makes the night and day;
The ſun revolving through th' ecliptic way,
Effects the various ſeaſons of the year.
BLACKMO

3. POLES. The Poles of the earth are the tremities of the axis, or, when referred to heavens, the two points directly over the That which is viſible to us is called the arct or North pole; and its oppoſite, the antarctic South pole:

Two poles turn round the globe, one ſeen to riſe
O'er *Scythian* hills, and one in *Lybian* ſkies;
The firſt ſublime in heav'n, the laſt is whirl'd
Below the regions of the nether world:
There, as they ſay, perpetual night is found,
In ſilence brooding on th' unhappy ground:
Or when *Aurora* leaves our Northern ſphere,
She lights the downward heav'n and riſes there;
And when on us ſhe breathes the living light,
Red *Veſper* kindles there the tapers of the night.
DRYDEN'S VIRG

4. CIRCLES. Theſe are divided into gr and ſmall; but it muſt be here remarked, that th are all commenſurate, and ſuppoſed to contain 3 degrees each. Great circles are thoſe which div the earth into two equal parts, as the EQUATO the ECLIPTIC, the BRAZEN MERIDIAN, HORIZON, and the COLURES. The ſmall, leſſer circles, are thoſe which divide the ſph into two unequal parts, as the TROPICS, POLAR CIRCLES, &c.

5. EQUATOR. The equator, or equinoct line, divides the globe into two equal parts, for ing the Northern and Southern hemiſpheres: he it takes its name of the *equator* or *equaller*.

the language of mariners, this is called *the Line*; and when they ſail over it they are ſaid to "croſs "the line." On the terreſtrial globe this circle is called the equator, and is divided into twice 180 degrees, numbered Eaſtward and Weſtward from the firſt meridian; but on the celeſtial globe it is called the equinoctial, and is divided into 360 degrees, reaching quite round; the firſt beginning at the point Aries, where the ecliptic and equinoctial interſect one another. Whenever the ſun comes to this circle, the days and nights are equal all round the globe, becauſe he riſes then due Eaſt, and ſets due Weſt. Thoſe who live under the equator have no variation in the length of their days and nights. From this circle the declination of the ſun or ſtars on the celeſtial globe, or the latitude of places on the terreſtrial, are accounted on the meridian; and upon it are reckoned the right and oblique aſcenſion of the ſun and ſtars on the celeſtial globe, and the longitude of places upon the terreſtrial.

6. **ECLIPTIC.** The ecliptic is a great circle cutting the equator obliquely, in the two oppoſite points of Aries and Libra, with which it makes an angle of 23 degrees 30 minutes. It is divided into twelve times 30 degrees, which twelve portions are called by twelve different names; and with regard to their ſituation and correſponding ſeaſons and months, they ſtand in the following manner:

NORTHERN SIGNS; SO DENOMINATED AS BEING NORTH OF THE EQUATOR.

Spring..	Aries ♈, the Ram, March and April.
	Taurus ♉, the Bull, April and May.
	Gemini ♊, the Twins, May and June.

Summer	Cancer ♋, the Crab, June and July.
	Leo ♌, the Lion, July and Auguſt.
	Virgo ♍, the Virgin, Auguſt & Sept.

SOUTHERN SIGNS; SO CALLED AS BEING SOUTH OF THE EQUATOR.

Autumn	Libra ♎, the Balance, September and October.
	Scorpio ♏, the Scorpion, October and November.
	Sagittarius ♐, the Archer, November and December.
Winter	Capricornus ♑, the Goat, December and January.
	Aquarius ♒, the Water-bearer, January and February.
	Piſces ♓, the Fiſhes, February & March.

N. B. The ſun enters into Aries, March 20; Taurus, April 19; Gemini, May 21; Cancer, June 21; Leo, July 23; Virgo, Auguſt 23; Libra, September 23; Scorpio, October 23; Sagittarius, November 22; Capricornus, December 22; Aquarius, January 19; and Piſces, February 19.

The order of the ſigns is thus deſcribed by Dr. Watts:

The RAM, the BULL, the heavenly TWINS,
And next the CRAB the LION ſhines,
The VIRGIN, and the SCALES:
The SCORPION, ARCHER, and SEA-GOAT,
The MAN that holds the WATER-POT,
And FISH with glittering tails.

Eclipſes, both ſolar and lunar, always happen in this circle, from which circumſtance it receives the appellation of the *ecliptic*. It is likewiſe called the *Via Solis*, or Sun's Path, becauſe the ſun never departs from it, in travelling from the ſummer to the winter ſolſtice; and again from the winter to the ſummer ſolſtice; and one revolution of this orb from any one aſſigned point in the ecliptic to the ſame again, conſtitutes a tropical year, conſiſting of 365 days, 5 hours, 48 minutes, and 57 ſeconds. In this circle the ſun advances 1 degree every 24 hours; and 30 degrees every month; paſſing through the whole 360 degrees in a year.

7. ZODIAC. In the Zodiac Circle, the breadth of which is 16 degrees*, the twelve ſigns above mentioned are placed, the ecliptic being in its centre, from which, as we have juſt obſerved, the ſun never departs:

> The golden ſun ſalutes the morn,
> And having gilt the ocean with his beams,
> Gallops the Zodiac in his gliſt'ring coach†.
>
> SHAKESPEARE.

Within the bounds of the zodiac alſo, all the planets perform their revolutions. It derives its name, ſay ſome authors, from a Greek word ſignifying *animal*, becauſe the ſigns with which it is filled bear the names of certain animals which the Ancients fancied the figures of its conſtellations reſembled. Others, however, aſſert, that the term zodiac comes from a Greek word denoting *life*, becauſe the planets were formerly ſuppoſed to have a great influence on animal life.

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* See the celeſtial globe.

† It may be proper again to remark, as more immediately connected with this and the preceding article, that whenever poets, aſtronomers, or even the ſacred ſcriptures, ſpeak of the motion of the ſun, they mean its *apparent* motion; the earth being in reality the *moving* body, and thereby cauſing the ſun to *appear* to move, in a contrary direction, round our planet. See Axis, Art. 2.

8. Brazen Meridian. This large braſs circle, which is called the Meridian becauſe the ſun reaches it at the *Meridies*, or mid-day, ſerves to divide the globe into two equal parts, called the Eaſtern and Weſtern hemiſpheres. It is divided into four quadrants, of ninety degrees each: two of which begin at the equator, and increaſe toward the poles, which ſerve to ſhew the latitude of places on the terreſtrial globe, and the declination of the ſun, moon, and ſtars on the celeſtial. The other two quadrants are numbered from the poles, and increaſe in degrees towards the equator; and theſe ſerve to elevate or depreſs the poles, according to any aſſigned latitude.

9. Degree is the 360th part of the circumference of the globe, and contains 60 geographical or 69½ ſtatute miles. The value of a degree on a great circle of the earth, is found by travelling directly in the ſame *meridian*, meaſuring the miles all the way, till the *latitude* be altered one degree. The operation is performed by meaſuring a certain diſtance upon the meridian by a ſeries of triangles, whoſe angles may be meaſured by actual obſervation, connected with a baſe, whoſe length may be taken by an actual ſurvey; and then to obſerve the different altitudes of the ſame ſtar at the two extremities of that diſtance. Each degree is divided into 60 equal parts called minutes; and each minute into 60 ſeconds, &c. Degrees are marked with a ſmall cypher over them (°), minutes with one daſh (′), and ſeconds with two daſhes (″).

10. Rational Horizon. The Horizon is expreſſed by the upper ſurface of the wooden circle in which the globe is ſuſpended, dividing it into

two hemiſpheres. This circle determines the riſing and ſetting of the ſun, moon, and ſtars, in any particular latitude; for when any of them come to the Eaſtern edge of the horizon, we ſay they riſe; and when they reach the Weſtern edge, we ſay they ſet; hence, likewiſe, we find the altitudes of the celeſtial bodies, and determine the increaſe, decreaſe, and duration of night or day, in all places of the earth. The Rational Horizon has, moreover, ſeveral uſeful concentric circles drawn upon it. The innermoſt of theſe is divided into degrees, which are numbered both ways from the Eaſt and the Weſt, until they end at 90 degrees in the North and South points. The uſe of theſe diviſions is, to ſhew the amplitudes of the ſun and ſtars, at their riſing and ſetting. The next circle is marked with the points of the mariner's compaſs*; the ſucceeding ones exhibit the twelve ſigns of the Zodiac, their names and characters, and the number of degrees belonging to each; beyond the laſt of theſe is a calendar, ſhewing the months, and days of the months, correſponding with the ſigns and their reſpective degrees.

11. SENSIBLE HORIZON. The ſenſible, or apparent horizon, is that circle which bounds the ſight of every ſpectator on all ſides, where the earth and ſky appear to meet; and is of greater or leſs extent, according as the eye is nearer to, or more remote from, the level of the earth. Thus, an eye placed at five feet above the ſurface of the earth, or ſea, will have a proſpect of no more than two miles and a quarter around, admitting the

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* The Mariner's Compaſs is an inſtrument by which ſeamen ſteer their ſhips. See Arith. Queſt. Art. Navigation; and Fleur-de-lis in this work.

earth to be perfectly level; but an eye at twent feet high will ſee five miles and three quarters.

12. Colures. Theſe are two great circles imagined to interſect each other at right angles, in the poles of the world. One of them paſſes through the ſolſtitial, and the other through the equinoctial point of the ecliptic: whence the firſt is denominated the *ſolſtitial* and the ſecond the *equinoctial colure*. This laſt determines the equinoxes, and the former the ſolſtices. By thus dividing the ecliptic into four equal parts, they alſo deſignate the four ſeaſons of the year. The equinoctial points are the beginning of Aries and Libra, called the vernal and autumnal equinoxes; and the ſolſtitial points the beginning of Cancer and Capricorn, denominated the ſummer and winter ſolſtices. But this diſtinction is to be underſtood as applicable only to our Northern hemiſphere; for in the Southern, the ſun's entrance into Capricorn makes the ſummer ſolſtice, and that into Cancer the winter ſolſtice. Our ſummer ſolſtice, which happens on the 21ſt of June, makes the longeſt day; and the winter ſolſtice, which occurs on the 22d of December, the ſhorteſt; and when the ſun is in either of the equinoctial points, namely, about the 20th of March, or 23d of September, the days and nights, in every part of the globe, are equal to each other; the ſun then riſing due Eaſt, and ſetting due Weſt, which never takes place at any other time of the year.

13. Tropics. Theſe are two ſmall or leſſer circles, drawn through the beginnings of Cancer and Capricorn parallel to the equator, and at 23½ degrees from it. That which comes in contact

with

i Cancer, is called the Tropic of Cancer; and
which touches Capricorn, the Tropic of Ca-
orn. They have their name from a Greek
l implying *turn*, or *converſion*; as being the
ſt limits of the ſun's way, or declination to-
s North and South: ſo that, when this lumi-
in his apparent annual courſe arrives at either
em, he ſeems to return again towards the
or. The tropics, moreover, ſerve as a boun-
to the torrid zone.

POLAR CIRCLES. Theſe are two ſmall
ſer circles, parallel to the equator, and 23½
es diſtant from the reſpective poles which
encircle, or 66½ degrees from the equator.
adjacent to the Northern pole is called the
circle (from *arctos*, a bear, the name of a
llation near it); the other, on the Southern
denominated the *antarctic circle*, i. e. the
oppoſite to the arctic.

ZONES. Theſe are ſo called from a Greek
ſignifying a girdle; being broad ſpaces, like
es, encircling the earth. The tropics and
circles divide the earth into five zones or
which derive their names from the dif-
t degrees of heat and cold to which their
ions ſubject them; theſe are, the torrid zone,
vo temperate zones, and the two frigid zones.
torrid zone occupies that ſpace which is
ded between the tropics of Cancer and Capri-
; the two temperate zones are comprehended
ixt the tropics and polar circles; and the two
l zones lie within the arctic and antarctic
s.

The following deſcription of the zones is give
by Dryden from Virgil and Ovid:

Five girdles bind the ſkies: the torrid zone
Glows with the paſſing and repaſſing ſun;
Far on the right and left, th' extremes of heaven,
To froſts, and ſnows, and bitter blaſts are given;
Betwixt the midſt and theſe, the gods aſſign'd
Two habitable ſeats for human kind;
And croſs their limits cut a ſloping way,
Which the twelve ſigns in beauteous order ſway:
And as five zones the ætherial regions bind,
Five correſpondent are to earth aſſign'd,
The ſun, with rays directly darting down,
Fires all beneath, and fries the middle zone:
The two beneath the diſtant poles, complain
Of endleſs winters and perpetual rain:
Betwixt th' extremes two happier climates hold
The temper that partakes of hot and cold.

The torrid zone was ſo called by the ancients
becauſe they conceived, that, being continuall
expoſed to the perpendicular or direct rays of th
ſun, it was rendered uninhabitable, and containe
nothing but parched and ſandy deſerts. Thi
notion, however, has long ſince been refuted *
It is found that the long nights, plentiful dew
regular rains, and cooling breezes †, which preva
almo

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* See Ovington's Voyage to Surat: and Ulloa's Voyag

† Sir Walter Raleigh informs us, that the hotteſt regions
the world which are ſeated under the equinoctial line, or ne
it, are refreſhed with a daily gale of eaſterly wind, that alwa
blows ſtronger in the heat of the day. Thomſon, ſpeaki
of the torrid zone, remarks, [illegible]t the ſun

kind before him ſends
The general breeze, to mitigate his fire,
And breathe refreſhment on a fainting world.

The conſtant [illegible]ſt wind between the tropics is occaſione t throughout the torrid zone, render the not only habitable, but ſo fruitful, that in places they have two harveſts in a year.

: two temperate zones are called *temperate*, e, meeting the rays of the ſun obliquely, njoy a moderate degree of heat.

two frigid zones are denominated *frigid*, : the cold is there ſo extreme, that, for a art of the year, every thing is frozen, all ole life is entirely ſuſpended, and even ani- : ſubſiſts with difficulty :

ron'd in his palace of cerulean ice,
re Winter holds his unrejoicing court;
d thro' his airy hall the loud miſrule
driving tempeſt is for ever heard:
re the grim tyrant meditates his wrath;
re arms his winds with all-ſubduing froſt,
ulds his fierce hail, and treaſures up his ſnows.

THOMSON.

, however, is the attachment of every man, y nation under the ſun, to his own country, ny parts of the northern frigid zone are ed by people who contrive to ſupport a able exiſtence. Their principal food con- fiſh, ſea fowl, and the fleſh of rein-deer, an

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in popular language. by the action of the ſun, which g from *Eaſt* to *Weſt* heats, and conſequently ex- e air immediately under him; by which means a r tide of air always accompanies him in his courſe, ſions a perpetual *Eaſt* wind within thoſe limits. eral cauſe, however, is modified by a number of parti- he explication of which would be too tedious and ted for our preſent plan, which is to mention facts an theories. Our young readers may conſult on this, at variety of intereſting ſubjects, an ingenious work SCIENTIFIC DIALOGUES, which we earneſtly nd to their attention.

animal moſt peculiarly ſuited to the hy
diſtricts * :

Their rein-deer form their riches. Theſe
Their robes, their beds, and all their hom
Supply, their wholeſome fare, and cheerf
Obſequious at their call, the docile tribe
Yield to the ſled their necks, and whirl th
O'er hill and dale, heap'd into one expan
Of marbled ſnow, as far as eye can ſweep,
With a blue cruſt of ice unbounded glaz'

The length of their longeſt winter'
from one, to ſix months. The cold is
tremely ſevere : and the inhabitants, w
in the ſkins of beaſts, are obliged to cor
ſelves pretty much to their huts. Ye
this gloomy ſeaſon, the light of the mo
that of the aurora borealis ‡, enable th
ſue the occupation of hunting.

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[*] It is well obſerved by Miſs More, in h
Strictures on Female Education, that in the ſtu
phy and natural hiſtory, the attention of the pu
habitually turned to the goodneſs of PROVI
commonly adapts the various productions o
the peculiar wants of the reſpective inhabitants.
edit. 2.

[†] On account of the peculiar inclination o
orbit to the ecliptic, and alſo by means of the
the atmoſphere, which in the northern regions
denſe, the moon gives an *uninterrupted light* n
the month, and ſometimes almoſt as long as it
affording any conſiderable light to any part
whatever.

[‡] The northern lights are ſeen there much
brighter than in any other parts of the world
quently, as to be viſible almoſt always during
the ſun, and with infinite variety of appearance
Voyage to Hudſon's Bay ; Pontoppidan's Hiſt
the Annual Reg. for 1759 : and Aurora Boreali

cing meteors then, that ceaſeleſs ſhake
ng blaze refracted o'er the heavens,
vid moons, and ſtars that keener play
ouble luſtre from the gloſſy waſte,
the depth of *Polar Night*, they find
drous day: enough to light the chaſe,
e their daring ſteps to Finland fairs.

THOMSON.

gth the winter's night is ſucceeded by the
s day, which in like manner continues
to ſix months:

l ſpring returns; and from the hazy ſouth,
dim Aurora ſlowly moves before,
lcome ſun, juſt verging up at firſt,
ll degrees extends the ſwelling curve!
en at laſt for gay rejoicing months,
und and round his ſpiral courſe he winds,
he nearly dips his flaming orb.
s up again, and reaſcends the ſky.

THOMSON.

habitants then leave their huts; and the
t ſoon revives the few plants and vegeta-
t grow there. At Spitſbergen, within
ees of the North pole, the ſummer com-
bout the middle of May; in the begin-
July the plants are in flower; and within
's time they perfect their ſeeds. And
in all the higher Northern latitudes the
s his rays more obliquely, yet, from his
ntinuance above the horizon, it is found
heat becomes as great as that of ſome places
rrid zone.
g thus given a ſuccinct account of the five
we ſhall conclude the ſubject by attempt-
mpreſs the minds of our juvenile readers

with an idea of the goodneſs of the Deity the beneficent adaptation of *four* of them * t various wants of the human race. This is clearly manifeſted in the ſtrong attachment of to his native ſoil. For, ſtrange as it may appe us, amid the luxuries that we have been accuſt to in theſe climates, and amid the advan of civilization, it is an undoubted fact, tha poor Laplanders, amid their ſnows, and enjc ſo few articles of accommodation, are yet vinced, that in the whole univerſe they coulc find a place of abode more ſecure and agre than their own country †;—that the Kamtſcha think themſelves the happieſt people in the w and look upon the Ruſſians who are ſettled a them with contempt;—that the Greenlande themſelves, in their own eſtimation, far a the Europeans;—that the Arabians dwell pleaſure amid the burning ſands of the deſe that the barbarous inhabitants of the moſt ſc ing regions of Africa procure, with the u eaſe, what they eſteem the comforts and cc niencies of life;—that the natives even of Se think their territory a paradiſe; and that Eſkimaux Indians, who inhabit a dreary re in North America, retain the ſtrongeſt and aſtoniſhing partiality for it, even when brc to the European factories, and after they lived there for ſeveral years ‡. It is recorde

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* The South frigid zone, being almoſt, if not entirely c with mountains of ice, is uninhabited. See Cook's Voy

† They love their mountains and enjoy their ſtorms.
Tho

‡ See "Hymns to the Supreme Being," by Edw King, Eſq. a gentleman alike diſtinguiſhed for the nity of his manners, his profound erudition, and fervent

Piozzi, that OMAI, a native of Otaheite,
had been treated moſt generouſly by his
patrons in England) when about to return
with Capt. Cook in his laſt voyage, ſaid—
orſe there! no aſs! no cow, no golden pip-
no diſh of tea!—Ah, Miſſey! I go without
thing—*I always ſo content there though.*

. Coxe relates a remarkable inſtance of the
ment which is felt in the human breaſt for
lace of our birth. This, he obſerves, is ſo
among the *Swiſs* who are engaged in fo-
ſervice, that a favourite air, which is com-
played and ſung in *Swiſſerland,* called
des vaches, awakens in the ſoldiers ſuch a
ng recollection of their native country, that
n brings on a ſettled melancholy, and occa-
frequent deſertion; on which account it is
lden to be played among the *Swiſs* troops in
rench ſervice. The French, he adds, call the
diſcontent ſo produced, *l[illegible]maladie du pays* *.
anguage of Dr. Goldſmith is, therefore, not
oetical than true:

> r is that ſhed to which his ſoul conforms,
> d dear that hill which lifts him to the ſtorms:
> d as a child, when ſcaring ſounds moleſt,
> ngs cloſe and cloſer to the mother's breaſt,
> the loud torrent, and the whirlwind's roar,
> bind him to his native mountains more.
>
> TRAVELLER.

is ſubject is moreover illuſtrated and con-
d by innumerable examples in "STURMS'
ctions for every Day in the Year."

. CLIMATES. Climates, in a geographical
, are ſpaces of the earth's ſurface contained

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* Sketches, &c. p. 274.

between two circles, drawn at ſuch a diſtance f each other, that the longeſt day at the leſſer p lel exceeds that at the next greater parallel by an hour. Between the equator and each p circle are 24 ſuch climates; and from each p circle to its reſpective pole, are ſix more, w increaſe not by half hours, but by months: t are, therefore, 60 climates in all; 30 on ſide of the equator. When the latitude of a p is known, the climate in which it is ſituatec eaſily be found by an operation upon the gl or when its longeſt day is given, ſubtracting the length of the day at the equator, from number of hours which *that* contains, and converting the remainder into half hours, give the climate. Climate, in the commo popular ſenſe, is a region, or tract of land, di ing from another by the temperature of the Clime is a contraction of climate, and much in poetry.

17. CARDINAL POINTS. Theſe are four p cipal points of the horizon, Eaſt, Weſt, N and South, coinciding with the four cardina gions of the heavens, and they are 90 deg diſtant from each other. The intermediate po which are 28 in number, are called colla points, or Rhumbs; making with the cardinal being the entire number of points on the mari compaſs, which are all diſtinguiſhed by parti names, compounded from the four principal on

18. HOUR CIRCLES. The hour or horary cles are ſmall circles on the globe, placed at

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* See the wooden horizon of the globe.

h and South poles, having the hours of the day
eated upon them, with an index to each,
ting to any particular time. Every hour an-
s to 15 degrees of the equator, and *diſtance*
y that means reduced into time at pleaſure.
circle ſerves to ſhew the riſing, ſetting, or
inating of the celeſtial bodies, and anſwers
ous other uſeful purpoſes.

. INDEXES. Theſe are two moveable pointers
at the North and South poles, which are the
es of the hour circles.

. QUADRANT OF ALTITUDE. This is an
ndage of the artificial globe, conſiſting of a
a or flexible ſlip of braſs, the length of a
rant of one of the great circles of the globe,
divided into 90 degrees. At the end, where
diviſions terminate, there is a nut riveted on,
urniſhed with a ſcrew, by means of which
nſtrument is fitted on to the meridian; and is
eable round upon the rivet, to all points of
horizon. Its uſe is to ſerve as a ſcale in the
uring of altitudes, diſtances, amplitudes, azi-
s, &c. The modern quadrants have a cre-
lum graduation, which reaches 18 degrees
w the upper ſurface of the horizon, for the
oſe of finding the beginning and the ending
wilight.

. HEMISPHERE. As every great circle
des the globe, or ſphere, into two equal parts,
ch of theſe is termed a hemiſphere, or half
re. The horizon divides the upper from the
r hemiſphere; the equator ſeparates the Nor-
n from the Southern hemiſphere; and the

meridian divides the Eaſtern from th
hemiſphere.

22. **MERIDIANS.** Theſe are large cir
inveſt the entire globe, paſſing through
and cutting the equator at right angles,
grees diſtance from each other; being,
24 in number; hence called *hour-circ*
ſponding with the hours of the day
They are, however, numerous and mov
cauſe every place (except thoſe due
South of each other) has a diſtinct meridi
the ſun, moon, and ſtars, come to the
of any place, they are, with reſpect to
at the higheſt, and begin to decline
have paſſed it. They are called meridi
the latin word *meridies*, i. e. mid-day
when any of theſe meridians, as the e
round upon its axis, is brought directl
the ſun, it is noon, or mid-day, to all pl
that meridian.

23. FIRST MERIDIAN. The firſt n
that from which the reſt are accounted,
from Weſt to Eaſt. The firſt meridian
beginning of longitude. The fixing of
dian is a matter merely arbitrary; and
ferent perſons, nations, and ages, hav
differently. Our modern geographers
makers generally aſſume London, or rati
wich *, for a firſt meridian, and then

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* The aſtronomers, in their calculations, uſ
the meridian of the place where their obſervatio
for their firſt meridian; as Ptolemy at Alexand
Brahe at Uranibourg; Riccioli at Bologna; I
the Royal Obſervatory at Greenwich; and the I
Obſervatory at Paris.

ongitudes of their places. Hipparchus (the
illuſtrious aſtronomer of all antiquity) fixed
ſt meridian at Ferro, one of the Canaries,
which, till lately, longitude has ever ſince
enerally accounted. Hipparchus was a native
des, and died about 125 years B. C.

LONGITUDE. Terreſtrial Longitude, which
ays either Eaſt or Weſt, is the diſtance of the
ian of any aſſigned place from ſome firſt me-
, reckoned in degrees and minutes on the
r. But it muſt be here obſerved, that the
ude of one place from another does not pro-
he true diſtance, unleſs they are ſituated on
uator, becauſe the meridians are continually
ching each other, from the equator towards
les, where they finally meet: hence, though
circle contains 360 degrees, every degree
ot contain 60 miles, as we ſhall ſhew here-
in a diſtinct problem. Eaſtern longitude is
d towards the right hand, and Weſtern to-
the left, from the meridian of London. The
e from Eaſt to Weſt was called *longitude*,
om North to South *latitude*, becauſe the an-
were acquainted with the globe of the earth
reater extent in the former direction, than
latter. Hipparchus was the firſt perſon
letermined the longitude and latitude of
; which he effected by obſerving the ſtars,
us, by connecting geography with aſtronomy,
that ſcience on certain principles.

LATITUDE. Terreſtrial Latitude is the
ce of a place from the equator towards either
meaſured on the brazen meridian, and is of
inds, North or South, according to its ſitua-

tion with reſpect to the equator. Circle to the equator are called parallels of lati cauſe they ſhew the latitudes of places interſection with the meridian. The la a place, and the elevation of the pole in place above the horizon, are terms uſed ently for each other, becauſe the latitude elevation of the pole are always equal; pole is always as many degrees above the of any place, as that place is diſtant f equator.

26. Zenith. This is the vertical p that point of the heavens which is exactly place or perſon. Hence, there are as many as there are places on the earth where the may be ſeen; and, upon the changing ſituation, we alſo neceſſarily change our Zenith-diſtance is the complement of the a ſtar's, meridional altitude; or, it is v meridian altitude wants of ninety degrees

27. Nadir. The Nadir is that poin heavens which is exactly under our feet diametrically oppoſite to the zenith. T is the zenith to our antipodes; and our the nadir to them.

The terms zenith and nadir are corrup two Arabic words; one ſignifying the *point;* and the other the *point oppoſite to th*

28. Positions of the Sphere. the poles of the horizon are in the equat called a right ſphere, becauſe then the and all its parallels, cut the horizon angles: then the poles of the world are

nd the days and nights are always
ıely 12 hours each.

ıe poles of the world are the poles of the
t is called a parallel ſphere, the equator
s parallels being then parallel to the
then the ſun, moon, and ſtars appear to
rcles parallel to the horizon; the ſame
of fixed ſtars is always above the
and there is a day of ſix months, and a
x months, refraction excepted.

he poles of the horizon are any where
he equator and the poles of the world, it
ın oblique ſphere: the equator and its
hen cut the horizon obliquely; the days
are of different lengths, according to
nt ſeaſons of the year; and one pole only
which is more or leſs elevated according
iquity of the ſphere.

MES ASSIGNED TO PERSONS FROM DIFFERENT SITUATIONS ON THE

Thoſe who live in the ſame degree of
and in equal latitudes, one North and
South of the equator, are called **ANTŒCI**.
of the day and night are the ſame with
the ſeaſons are contrary, and, conſe-
he longeſt day with the one is the ſhorteſt
other, and *vice verſa*. They have dif-
es elevated and the ſtars that never ſet

other. On the equinoctial days, the ſun
to the one, when it is ſetting to the othe

Thoſe who live in equal latitudes, on
and the other South, and alſo in oppoſite
longitude, are called ANTIPODES. Th
nights, and ſeaſons of the year, are all d
cally oppoſite to one another. The ſur
and ſtars riſe to the one when they ſet to t
and that during the whole year, for they
ſame horizon; they have different poles, bu
elevated; and thoſe ſtars that are always a
horizon of the one are always under the
of the other. The terms Antœci, Peric
Antipodes, are borrowed from the Gr
which, the firſt ſignifies "thoſe who dw
againſt each other,"—the ſecond, "th
live in the ſame circle;"—and the third,
who have the feet oppoſite each other."

30. NAMES ASSIGNED TO PERSON
THEIR SHADOWS. The ASCII are th
have no ſhadow at noon-day, the ſun be
vertical, which can only happen in th
zone:

When his beams at noon
Culminate from th' equator————
————— no way round
Shadow from body opaque can fall.

N

Milton calls the ſun's culminating, bei
"meridian tower;" a metaphor alſo
Virgil, who is followed punctually by S
his tranſlation of the paſſage:

The fiery ſun was mounted now on hight
Up to the heav'nly towers.

HISCII are thoſe who caſt their noon
etimes Northwards and ſometimes
according as the ſun is either to the
uth of them, which is likewiſe pecu-
orrid zone.

EROSCII are thoſe whoſe noon ſhadow
ojected one way; but this may be
or South, according to their ſituation,
be either in the Northern or Southern
one.

SCII are thoſe whoſe ſhadow moves
direction, quite round them, which
the inhabitants of the frigid zones,
in does not ſet for a conſiderable part
but moves round the horizon.

ms, like thoſe in the laſt article, are
origin,—of which the firſt ſignifies,
adow,"—the ſecond, "with ſhadows
"—the third, "with ſhadows only
-and the laſt, "with ſhadows round

PROBLEMS

ON THE

TERRESTRIAL GLOB

A PROBLEM is a mathematical que propoſed to be ſolved, or ſome practic be performed.

PROBLEM I.

To find the Latitude of any given Place *.

Bring the propoſed place to that ſide o brazen meridian which has the figures cou from the equator, towards the poles, and degree over it is the required latitude, e North or South.

EXAMPLES.

What is the latitude of London? Anſw. deg. North lat.

What is the latitude of the Mauritius Anſ. 20 deg. of South lat.

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* See Art. 25.

Req

Required the latitude of the following places:
Rome, Peterſburgh, Cairo, Canton, Pekin, Calcutta, Madras, Bombay, Mecca, Medina, Mocha, Conſtantinople, Gibraltar, Cadiz, Liſbon, Madrid, Stockholm, Bergen, Quebec, Potoſi, Juan Fernandez, Baldivia or Valdivia, Cape Horn, Cape of Good Hope, Botany Bay, the Pelew Iſlands, and Amboyna.

N. B. Places which are ſituated under the equator have not any latitude; and the greateſt latitude which a place can have is 90 degrees, that being the utmoſt diſtance from the equator to either pole. Degrees of latitude are all equal to 60 geographical, or 69½ Engliſh miles.

PROBLEM II.

To find the Longitude of any propoſed Place *.

Turn the globe till the given place comes in contact with the brazen meridian; and that degree of the equator which is then interſected by the meridian is the longitude ſought, either Eaſt or Weſt.

EXAMPLES.

What is the longitude of Vienna? Anſ. 16 deg. Eaſt long.

What is the longitude of Eaſter Iſland? Anſ. 110 deg. Weſt Long.

Required the longitude of the following places:
Owhyhee, Otaheite, Jamaica, Mexico, Campeachy, Cape Finiſterre, Oporto, Madeira Iſland,

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* See Art. 24.

All places, at the ſame diſtance fro
tor, on the ſame ſide of it, are ſaid
ſame latitude, or to be in the ſame par
tude: hence to perform this problem
given place to the meridian; then tu
a complete revolution, and all the p
paſs under the ſame degree of latitud
required.

EXAMPLES.

What places have the ſame latitude
Anſ. Stockholm and Peterſburgh, nea

Required the places whoſe latitude
as Philadelphia, Jamaica, Mexico, Ba
Azores, Archangel, Cape Horn, Ca
Hope, London, Porto Bello, Quito, L
illo, Hiſpaniola, Baldivia or Valdi
Falkland Iſlands, Quebec, Vienna,
Helena, Ormus, and the Iſle of Man.

ıeir days are of the ſame length; but theſe mmence reſpectively ſooner or later, when red with each other, according as the places elves differ in their longitudes: *e. g.* a place d 15 degrees to the Eaſt of another, will ts day begin an hour before, and if 15 degrees Weſt, an hour after, this laſt; and ſo in rtion for any greater or leſs number of s.

PROBLEM V.

d all thoſe Places which have the ſame Longitude as any given Place.

places that lie under the ſame meridian are have the ſame longitude; bring, therefore, ropoſed place to the meridian, and obſerve oſe places which fall under the ſame ſemi- of the meridian; and theſe have all the longitude.

rs, to high or mountainous ſituations. As an example cite part of Ruſſia, which, though lying nearly under e parallel with Milan, Bourdeaux, and other countries wns enjoying the moſt agreeable climate, is of an herical temperature entirely different: and adjacent to v, the capital of the empire *, which is ſituated under ne parallel with Edinburgh, the whole country was l with ſnow in the middle of April, notwithſtanding ıter had been mild and the ſpring uncommonly early at-Britain. Again, Newfoundland, which lies under e parallel with the Northern part of France, is uſually l with ſnow five months in the year.

rſburgh is ſtyled by the Ruſſians "The Place of Reſidence," ng the uſual reſidence of the latter ſovereigns.

D EXAMPLES.

EXAMPLES.

What places have the ſame longitude as Buenos Ayres?—Anſ. The Caribbee Iſlands, the S. W. part of the Iſland of Newfoundland, and Cape Breton.

Required the places whoſe longitude is the ſame as Peterſburgh, Genoa, the Philippine Iſlands, the Pelew Iſlands, Amboyna, Madras, Liſbon, the Sandwich Iſlands, the Society Iſlands, the Friendly Iſlands, New Zealand, Bombay, and Juan Fernandez.

N. B. Perſons having the ſame longitude, who are ſituated in the torrid, or either of the temperate zones, and whoſe latitude, of courſe, does not exceed 66½ degrees either North or South, have always ſimilar periods of the natural day, or, in other words, of that ſpace of time (24 hours) which the earth takes to perform its diurnal revolution. The light or darkneſs at thoſe times will, however, vary according to the reſpective ſituations of the places. For inſtance, a perſon reſiding at the equator, under the ſame meridian with London, has his artificial day terminated at ſix o'clock, even at our ſummer ſolſtice or longeſt day; whereas to an inhabitant of London the ſun does not then ſet till paſt eight. The difference is ſtill greater to perſons in oppoſite hemiſpheres; the longeſt day with the one being the ſhorteſt with the other, and *vice verſa*: yet will the hour be preciſely the ſame if they are ſituated under the ſame meridian; *i. e.* it will be mid-day, or one, two, &c. hours after or before that period with the one, when it is ſo with the other.

Places

es which lie under oppoſite meridians, have r noon, and every other hour of the natural , at oppoſite times. Thus when it is mid-day ondon, it is midnight to all thoſe places which under the oppoſite meridian.

PROBLEM VI.

find the Difference of Latitude between any two given Places.

ring the propoſed places to the brazen meri- n, and note their reſpective latitudes. If they both in the ſame hemiſphere, ſubtract the itude of one from the other, and the remainder l be the difference: but if they are ſituated on erent ſides of the equator, the ſum of their la- ıdes will be the difference of latitude required.

EXAMPLES.

What is the difference of latitude between Ma- d and Peterſburgh?—Anſ. 20 deg.

What is the difference of latitude between Cape rd and St. Helena?—Anſ. 30 deg.

Required the difference of latitude between ndon and Copenhagen; Archangel and Da- ſcus; Bombay and Goa; Pekin and Canton; racan and Schiras; Baſſora and Mocha; North pe and the Cape of Good Hope; Stockholm l Mexico; Philadelphia and Jamaica; Quebec l Panama; Porto Bello and the Streights of ıgellan; Tobago and Sierra Leona; Bermudas l Jamaica; Cape Verd and St. Helena.

PROBLEM VII

To find the Difference of Longitude
two Places.

As all places that lie under the ſaı
have the ſame longitude *, ſo all pla
under different meridians, have diff
tudes: and this difference may be ei
Weſt, conſequently the difference oı
between any two places, is the diſta
meridians from each other, meaſured
tor. Find, therefore, their reſpective
and if both places are ſituated on tł
of the firſt meridian, ſubtract the l
one from the other, and the remain
difference: but if they are ſituated
ſides of the meridian, add their longitu
and the total will be the longitude req

EXAMPLES.

What is the difference of longitı
Burſa and Cape Raſalgat ?—Anſ. 30 de
What is the difference of longitude
terſburgh and Vera Cruz ? Anſ. 130 de

Required the difference of longitı
Cork and Canton; Rome and Calcutt
Botany Bay: Vera Cruz and Siam;
Cape Comorin; Seville and Rhodes;
Boſton; Cape Florida and Borneo; C
Barcelona; London and Bourdeaux;
Mount Hecla; Vienna and the Az
Malſtrom and Liſbon.

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* See Problem V.

PROBLEM VIII.

To find the Sun's Place in the Ecliptic.

eek the day of the month in the calendar on horizon, and againſt that day in the adjoin- circle are the ſign and degree in which the is for that day: this being done, find the ſame ı and degree in the ecliptic on the ſurface of globe, and this is the ſun's place for that day noon.

EXAMPLES.

What is the ſituation of the ſun at the vernal ainox? Anſ. 1 deg. of Aries.

Required the ſun's place on the following days: e autumnal equinox, the ſummer ſolſtice, the inter ſolſtice, Jan. 21, Feb. 28, March 28, pril 16, May 12, June 19, July 14, A[illegible]uſt 1, 10, 25, 26, Sept. 19, Oct. 16, 25, Nov. 18, d Dec. 29.

N. B. The ſun's place may be more accurately und in degrees, minutes, and ſeconds, in the phemeris * for the current year, under the title the ſun's longitude.

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* Ephemerides, in aſtronomy, are tables calculated by ſtronomers, ſhewing the preſent ſtate of the heavens for very day at noon; that is, the places wherein all the planets re found at that time. It is from theſe tables that the clipſes, conjunctions, and aſpects of the planets are determined, horoſcopes, or celeſtial ſchemes, conſtructed, &c.

In England, the Nautical Almanac, or Aſtronomical Ephemeris, publiſhed annually by anticipation † under the direction

† Tables of this ſort are ſometimes made ſeveral years in advance. Lalande, in his Hiſtory of Aſtronomy for 1798, mentions his having eceived the ephemerides of Bologna for twelve years, viz. from 1799 o 1810, which, he ſubjoins, will ſerve for the uſe of ſuch as ſhall make lmanacs for a number of years to come.

PROBLEM IX.

The Sun's Place being given, to find the D the Month.

This problem is only the reverſe of the ceding one; for having the ſun's place give ſeeking in the calendar the correſponding d the month, the queſtion is anſwered.

EXAMPLES.

What is the day of the month when the ſ in the 5th degree of Aries?—Anſ. The 25 March.

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tion [illegible] Commiſſioners of Longitude, is the moſt ſidera[illegible] It began with the year 1767, and has regularly continued ever ſince. But WHITE's Ephe which was firſt printed in the year 1747, is a very p and uſeful little work, containing, beſides a great vari aſtronomical tables, a complete almanac, and its pric bound is only one ſhilling and ninepence.

Authors are greatly divided with regard to the etym of the world Almanac; but the moſt ſimple derivation a from the common ſpelling, as being thought to be com of two Arabic ones, *al manack*, which ſignify, *the dia*

Regiomontanus, a celebrated German aſtronomer, is to have been the firſt perſon in Europe who reduced alm into their preſent form and method, gave the characte each year and month, foretold the eclipſes and phaſes, calculated the motions of the planets, &c. Hi almanac was publiſhed in 1474. The real name of R montanus was John Muller, born at Koniſberg in Franc He was called Regiomontanus from the Latin name o natal place. Being called to Rome by Pope Sextus I aſſiſt in correcting the calendar, he was cut off by the plag 1476 in the 40th year of his age.

What are the days of the month in which the is reſpectively in the firſt degree of the twelve s of the zodiac ?

NORTHERN CONSTELLATIONS.

♈ ♉ ♊ ♋ ♌ ♍

SOUTHERN CONSTELLATIONS.

♎ ♏ ♐ ♑ ♒ ♓

PROBLEM X.

find the Sun's Declination, i. e. *his Receſs from the Equator Northward or Southward, at any given Period, which can never exceed* 23½ *degrees.*

Bring the ſun's place in the ecliptic to [illegible] bra-en meridian, and the degree over it is the decli-ation ſought, either North or South.

N. B. The ſun's declination is always North, n our ſummer half year, *i. e.* from the 20th of arch to the 23d of September, and Southward n our winter half year, from the 23d of Septem-er to the 20th of March. Or in other words, he ſun's declination is North during his courſe hrough the ſix Northern ſigns, and South while he aſſes through the ſix Southern Signs.

EXAMPLES.

What is the ſun's declination at the vernal and utumnal equinoxes ?—Anſ. 0.

At the ſummer and winter ſolſtices ?—Anſ. 23½ eg. North, at the former; 23½ deg. South, at the tter period.

Required the ſun's declination on the following days: Jan. 30, Feb. 7, 16, 25, March 14, April 12, May 29, June 24, July 21, Aug. 2, 24, Sept. 2, 3, Oct. 14, Nov. 4, 5, and Dec. 16.

When the globe has a ſcale of the ſun's declination upon it, this problem may be ſolved by bringing it to the braſs meridian; for in that ſituation the ſun's declination is over the aſſigned day.

N. B. The anſwers to the preceding examples may be proved by referring to the Ephemeris, under the title of the ſun's declination.

PROBLEM XI.

To rectify the Globe for any given Place.

We have before obſerved *, that the elevation of the pole and the latitude of a place are convertible terms, being always equal to each other. To rectify the globe, therefore, for any propoſed place, is to elevate the pole the ſame number of degrees above the horizon as correſponds with its latitude; an operation which is performed by counting them upon that ſide of the meridian which is numbered from *the poles towards the equator*, and placing the ſaid number of degrees in contact with the horizon. Find the latitude of the aſſigned place by Prob. I.

EXAMPLES.

Rectify the globe for London and the chief cities of Europe; for Archangel, Trebiſond, Smyrna,

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* Art. 25. p. 23.

Damaſcus,

aſcus, Erzerum, Medina, Mecca, Aden, Burſa,
ras, the Pelew Iſlands, Guam, Bilboa, Bour-
x, Cape Finiſterre, Oporto, Cape St. Vincent's,
, Cape Verd, Sierra Leona, Saldanha Bay,
ico, Porto Bello, Quito, Truxillo, Panama,
e Horn, Buenos Ayres, St. Sebaſtian, St. Sal-
or, Paraiba, and Surinam.

PROBLEM XII.

rectify the Globe for any given Place and Day of the Month.

levate the pole as directed in the laſt problem ;
n find the ſun's place for the aſſigned day, and
ng it in contact with the meridian ; ſet the
ex to 12 on the hour circle *, and place the
globe

As moſt, indeed we apprehend all, the hour circles on
ern globes are made with two rows of figures on them,
young readers will find it abſolutely neceſſary to peruſe
attention the ſubſequent obſervations. The 12 o'clock
e mentioned will repreſent the noon of the given day,
by it any other hour may be diſtinguiſhed to be either in
morning or afternoon ; for when the 12th hour is thus
ght in a ſtate of contact with the brazen meridian, it will
ar by inſpection that the hours on one of the two hour
les (on ſome globes the interior, on others the exterior
le) increaſe on the right hand, or *Eaſtern* ſide of the
en meridian, and decreaſe on the oppoſite, or *Weſtern*
of the meridian. Now the earth's motion being, as we
e before remarked ‡, from *Weſt* to *Eaſt*, it follows of
ſe, that the hours which increaſe, *i. e.* which are num-
d thus, 1, 2, 3, 4, &c. on the *Eaſtern* ſide of the afore-
12 at noon, muſt be *afternoon* hours, their correſponding
es having paſſed the meridian, or period of mid-day, a
ortionate ſpace of time ; and that the hours on the con-

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‡ Art. 2. page 5.

trary

globe due North and South *.

EXAMPLES.

Rectify the globe for Cherſon, Jan. 20; Ow
hee, Feb. 14; Portſmouth, March 14; Jeruſal
April 3, 5, May 14; Jamaica, May 3; Ca
May 9, 20; Chalgrove Field, near Ox
June 24; Philipſburgh, June 12; Newfoundl
June 24; Londonderry, July 31; Conſt
July 6; Tyrano, July 20; Breſt, July 27; I
[illegible]aire, July 22; Birmingham, July 14; Ch
July 6; New Foreſt, Aug. 2; Falaiſe, Aug.
Gomera, Sept. 6; Preſton Pans, Sept. 21; I
[illegible]eld, Sept. 18; Quebec, Sept. 13; Cadiz,
[illegible]; Lepanto, Oct. 7; Paris, Oct. 16; Porto
Nov. 2; Cuba, Nov. 18; Mexico, Nov. 8

[illegible] or Weſt [illegible] which are [illegible] &c. [illegible] bears the [illegible] at the [illegible] experience, [illegible] problems.

* [illegible]

ov. 28; Cadiz, Nov. 20; Peterhead,
Derby, Dec. 4; Toulon, Dec. 19.

PROBLEM XIII.

f the Month, and Latitude of a Place,
tter not to exceed 66½ *Degrees) being*
o find the Sun's Meridian Altitude, i. e.
ht above the Horizon at Noon, or Mid-

the globe for the aſſigned latitude; find
lace in the ecliptic for the given day,
it in contact with the meridian; then
r of degrees intercepted between that
the horizon, counted upon the meridian,
anſwer required.

EXAMPLES.

the ſun's meridian altitude Dec. 29, at
y, lat. 51¼ North?—Anſ. 15 deg.

d the ſun's meridian altitude on the fol-
ys at the places mentioned. July 21,
y, lat. 52¼ North.—March 20, Towton,
orth.—Aug. 22, Boſworth-Field, lat.
.—Nov. 30, Narva, lat. 59 North.—
St. Martha, lat. 11½ North—Nov. 26,
at. 51½ North.—July 8, Pultowa, lat.
—Dec. 11, Frederickſhall, lat. 59 North,
Peterſburgh, lat. 60 North.—Nov. 1,
t. 39 North.—Feb. 14, Owhyhee, lat.
—Jan. 20, Cherſon, lat. 46½ North.—
ſmael, *lat. 45 North.*—Oct. 8, Belgrade,
lat.

lat. 45 North.—Dec. 17, Oczakow, la North.—Nov. 5, Jemappe, lat. 50½ North

PROBLEM XIV.

The Sun's Meridional Altitude, and the Lat the Place, being given, to find the Day Month.

This problem is preciſely the reverſe preceding one; but it muſt be obſerved, t anſwer may be returned differently, accor the aſcending or deſcending ſigns * are em becauſe every degree of the ecliptic, the t ſtitial points excepted, has another exactly ing with it in altitude.

Rectify the globe for the aſſigned la count the given number of degrees of on the meridian, from the Southern verge horizon, towards the elevated pole; then n particular part of the ecliptic which can be in contact with the ſaid altitude, and finally the calendar on the horizon for the correſ day, and the problem is ſolved.

EXAMPLES.

If in the lat. 51°½ North, the ſun's me altitude, at two ſtated periods, was obſerve 59° and 23°½, what would be the days?—

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* The ſigns are divided into aſcending and deſce reſpect to the apparent direction of the ſun's pat former are Capricornus, Aquarius, Piſces, Aries, and Gemini; the latter are Cancer, Leo, Virgo Scorpio, and Sagittarius.

May 24, and July 18, the one; Nov. 3, and Feb. 6, the other.

Required the days of the month which correſpond with the following meridional altitudes and latitudes.

Altitude 0°, lat. 90 North.—Altitude 23°½, lat. 90 North,—Altitude 0° lat. 90 South.—Altitude 23°½, lat. 90 South.—Altitude 40°, lat. 65 North. —Altitude 27°, lat. 40 North.—Altitude 70°, lat. 20 North.—Altitude 55°, lat. 15 North.

PROBLEM XV.

The Latitude and Day of the Month being given, to find the Sun's Altitude at any Hour of the Day.

Rectify the globe for the propoſed latitude; bring the ſun's place in contact with the meridian; put the index to 12 at noon; then fix the quadrant of altitude in the zenith (*i. e.* exactly over the aſſigned latitude), and turn the globe till the index points to the hour required; and, finally, cauſe the graduated edge of the quadrant to touch the ſun's place in the ecliptic; the number of degrees between this laſt and the horizon, counted on the quadrant, is the height at that particular time.

EXAMPLES.

What is the altitude of the ſun at London, lat. 51½ North at the vernal and autumnal equinoxes, at 6 o'clock in the morning, and the ſame hour in the evening?—Anſw. 0.

Required the altitude of the ſun at the following places and hours of the days.

Stockholm, lat. 59, March 16, at ten in the morning.—Chalus, lat. 45, April 6, at three in the afternoon.—St. Lucar, lat. 37, May 30, at 8 in the morning and 4 in the afternoon.—Lima, lat. 12 South, June 26, at 9 in the morning and 3 in the afternoon.—Beauvais, lat. 49½ North, July 10, at 11 in the morning and 1 in the afternoon.—Cheronea, lat. 39, Aug. 2, at 7 in the morning and 5 in the afternoon.—Paris, lat. 48 Sept. 2, at 10 in the morning; and Aug. 10, at 3 in the afternoon.

PROBLEM XVI.

The Latitude, and the Sun's Altitude, and Day of the Month, being given, to tell the Hour.

This is the direct reverſe of the preceding problem, only it may have two anſwers; namely, the hour may be either in the morning or the afternoon.

Rectify the globe as before directed, and turn it and the quadrant on the Eaſtern ſide, till this laſt touches the ſun's place at the aſſigned height, and the index will point to the time required, which, in this inſtance, will be ſome portion of the morning; and a ſimilar operation performed on the Weſtern ſide of the globe, will give the afternoon hour.

EXAMPLES.

What is the hour at London, lat. 51½, on the 19th of May, when the ſun's altitude is about $43^{\circ}\frac{1}{2}$?—Anſ. 9 in the morning, or 3 in the afternoon.

Required

he correſponding hour with the fol-
ides, ſun's altitude, and days of the

lat. 32, Jan. 6, ſun's altitude 20°.
at. 34, April 21, ſun's altitude 30°.
. 51, Jan. 7, ſun's altitude 0°.—
, Jan. 21, ſun's altitude 6°—Ferns,
. 29, ſun's altitude 10°.—Hackney,
pril 19, ſun's altitude 15°.—York
37, Oct. 19, ſun's altitude 13°.—
. 45, Nov. 21, ſun's altitude 7°.

ROBLEM XVII.

ime of the Sun's riſing and ſetting,
ntly the Length of any particular Day
in a given Latitude, or at any pro-

globe for the given latitude, or
y of the month, agreeably to the
en in the 12th problem; then revolve
the ſun's place comes in contact with
rge of the horizon; and if the hour
double row of figures *, the index
ew the time of the ſun's riſing, and
its ſetting: the number of inter-
is the length of the day required,
ted from 24 will give the duration of
ut if the hour circle have no more
row of figures, the operation juſt
ll only point out the time of the ſun's

---

thoſe, for inſtance, on the globes made by
e p. 4.

riſing: and its ſetting muſt be found in ner, by bringing the ſun's place to th edge of the horizon.

N. B. The hour of ſun-ſetting dou the length of the day, and the hour of doubled gives the length of the night.

Another method of performing this Rectify the globe for the aſſigned lati the ſun's place for the given day, an to the Eaſtern verge of the horizon; ſet to 12 at noon; turn the globe till the touch the Weſtern verge of the horizon ſerve by the index the number of hours w intervened during the operation; and th the length of the day required. If th the propoſed day do not exceed twelve hour to which the index points when the is brought to the Weſtern edge of the its length: but if it do exceed 12 hours to which the index then points muſt be 12, and the total of theſe will give t ſought.

EXAMPLES.

What is the length of the day at Lo 51½, at the ſummer and winter ſolſtices?-

N. B. This problem may alſo be ſolved by the e of declination, in the following manner: Having rectified the globe for the aſſigned lati- e, bring the middle part of the ſcale to the idian, and ſet the index to 12; then bring the en day in the ſcale to the Eaſtern ſide of the izon; and the index will ſhew the time of the s riſing and ſetting; if the hour circle have a ble row of figures; if it have only a ſingle , the ſetting muſt be ſought by turning the e to the Weſtern ſide of the horizon.

PROBLEM XVIII.

find the Length of the Longeſt Day and ſhorteſt Night in any given Place, or aſſigned Latitude, ot exceeding 66½ Degrees in the Northern Hemiſphere.

Rectify the globe for the given latitude, or poſed place; bring the ſummer ſolſtice, or firſt gree of Cancer (which is the utmoſt receſs of e ſun from the equator Northwards, and conſeently the boundary of the length of days in the orthern hemiſphere) to the meridian; ſet the dex to 12 at noon, and revolve the globe till the n's place, *i. e.* the beginning of Cancer, come in ntact with the Eaſtern verge of the horizon, and e index, on a globe with a double hour circle, ill point to the time of the ſun's riſing and ſeting: the intervening hours are the length of the ngeſt day in the latitude propoſed. If the globe ave only a ſingle hour circle, the above operation ill give the time of the ſun's riſing; and its time f ſetting muſt be ſought by bringing the ſun's lace to the Weſtern edge of the horizon.

tle touches the weſtern edge of the
finally, count the number of hours w
has paſſed over during the revolution
N. B. The length of the longeſt
from 24 will give the duration o
night: and allowing one for every h
the longeſt day contains above 12 ho
the climate in which the propoſed pl
A part of half an hour muſt be acco
climate; *e. g.* where the longeſt day
the place is in the ſecond climate.

EXAMPLES.

What are the longeſt day and the
at London, and in what climate * is
—Anſ. 16½ hours the longeſt day,
ſhorteſt night; and London is ſituat
climate.

Required the length of the long

PROBLEM XIX.

l the Length of the longeſt Day and the ſhorteſt
ht in any given Place, or aſſigned Latitude,
exceeding 66½ *Degrees in the Southern He-*
here.

s problem is ſolved exactly in the ſame man-
the preceding one, only the South pole muſt
vated inſtead of the North, and the firſt
: of Capricorn ſubſtituted for the firſt degree
cer; becauſe *that* point of the ecliptic ſhews
n's greateſt receſs from the equator South-
and, of courſe, exhibits the boundary of
ngeſt day in the Southern hemiſphere.

B. This problem cannot be worked with
; which have the hour-circle attached to the
or ſurface of the braſs meridian, becauſe that
iſtance prevents the South-pole from being
ed; and globes of this deſcription are more-
deficient in a Southern hour-circle.

EXAMPLES.

at is the length of the longeſt day and the
ſt night, and in what climate is a place which
ated in 51½ deg. of South latitude?—Anſ.
ſt day 16½ hours; ſhorteſt night 7½ hours;
te the 9th.

quired the length of the longeſt day, the
ſt night, and the climate, of the following
: Juan Fernandez, Cape of Good Hope,
Horn, Buenos Ayres, Baldivia, Rio Janeiro,
, Potoſi, Arica, Truxillo, St. Salvador, Quito,

Otaheite, St. Helena, Iſle of France, Iſle
bon, Botany Bay, Queen Charlotte's Iſles
Straits, Amboyna, Melinde, Bantam, and

PROBLEM XX.

To find the Length of the ſhorteſt Day and t
Night at any propoſed Place, or in a
Latitude, not exceeding 66½ Degrees in
thern Hemiſphere.

Rectify the globe for the aſſigned plac
tude, and proceed agreeably to the directi
in the 17th problem; only inſtead of the fi
of Cancer, ſubſtitute the firſt degree of
nus, which is the boundary of the ſhorte
the Northern hemiſphere.

N. B. The length of the ſhorteſt day ſ
from 24 will give the duration of th
night.

EXAMPLES.

What is the length of the ſhorteſt day
longeſt night at London?—Anſ. 7¾ hours
of the ſhorteſt day; and 16¼ hours the

PROBLEM XXI.

To find the Length of the ſhorteſt Day and the longeſt Night at any aſſigned Place, or given Latitude, not exceeding 66½ Degrees in the Southern Hemiſphere.

This problem is ſolved exactly in the ſame manner as the 19th, only ſubſtituting the firſt degree of Cancer for that of Capricorn.

EXAMPLES.

What is the length of the ſhorteſt day and the longeſt night, of a place ſituated in 51½ deg. of South latitude?—Anſ. Shorteſt day 7½ hours; longeſt night 16½ hours.

Required the length of the ſhorteſt day and the longeſt night at Saldanha Bay, Aſcenſion Iſle, Chiloe Iſle, Falkland Iſles, the Straits of Le Mair, and Olinda.

PROBLEM XXII.

To find the Latitude in the Northern Hemiſphere, the Length of the longeſt Day being given.

Bring the firſt degree of Cancer to the meridian, without regarding the poſition of the globe; ſet the index to noon; turn the globe Weſtward, till the index points to half the given number of hours; keep the globe fixed, and move the meridian till the firſt degree of Cancer coincides with the horizon; then obſerve what degree of the meridian is cut by the horizon under the North pole, and that will be the latitude required.

EXAMPLES.

What is the latitude of a place where the length of the longeſt day is 12?—Anſ. 0.——Where the longeſt day is 16½ hours?—Anſ. 51½ deg.

Required the latitude of places where the longeſt days are as follow:——12½ hours; 13 hours; 13½ hours; 14 hours; 14½ hours; 15 hours; 15½ hours; 16 hours; 16½ hours; 17 hours; 17½ hours; 18 hours; 18½ hours; 19 hours; 19½ hours; 20 hours; 20½ hours; 21 hours; 21½ hours; 22 hours; 22½ hours; 23 hours; 23½ hours; 24 hours.

N. B. To perform this problem for the Southern hemiſphere, the firſt degree of Capricorn and the South pole muſt be employed.

PROBLEM XXIII.

To find all thoſe Places whoſe longeſt Days are of the ſame Length, the Length of the longeſt Day at any particular Place being previouſly found.

Find the latitude correſponding with the given length of the day, by the preceding problem; obſerve it on the braſs meridian; then revolve the globe, and all thoſe places which paſs under that degree of the meridian have their longeſt days the ſame.

EXAMPLES.

EXAMPLES.

at places have the longeſt day the ſame
as London, where the longeſt day is 16½
?—Anſ. Bruſſels, Dreſden, Leipſick, Warſaw,
od, Milford-Haven, Middleburgh, Cork,
rk, Bruges, Ghent, Cologne, Breda, Boiſleduc,
, Oſtend, Breſlaw, Nootka Sound, and Belle-
orth America), have all their longeſt day
of the ſame length as the longeſt day at
n.

l all thoſe places whoſe longeſt days corre-
with the following :——Botany Bay, Arch.
Jamaica, Cape Horn, Cape of Good Hope,
tar, the Fox Iſlands, Quebec, Mexico, and
ief cities of Europe.

PROBLEM XXIV.

in what Climate any Place is ſituated, the Latitude being given.

l the length of the longeſt day by problem
th, from which ſubtract 12 ; the remainder
converted into half hours, will give the
d climate.

EXAMPLES.

hat climate is London ſituated, its latitude
51½ North ?—Anſ. The 9th.
vhat climate are Malacca, Cayenne, and
m ſituated, their latitudes being about 8
orth ?

Siam, Madras, Pondicherry, Tobago, the G nades, St. Vincent, and Barbadoes, lat. abou deg. ?

Mecca, Bombay, Canton, Mexico, Jamaica, a Hiſpaniola, lat. about 23 deg. ?

Egypt, the Canaries, Delhi, and the Florid lat. about 30 deg. ?

Gibraltar, Jeruſalem, Iſpahan, Nankin, Williamſburgh, lat. about 36 deg. ?

Liſbon, Madrid, Minorca, Sardinia, Samarca Pekin, Rome, Conſtantinople, Philadelphia, Ne York, Boſton, Rhode and Long Iſlands, lat. abo 41 deg. ?

Paris, Vienna, Nova Scotia, Cape Breton, Newfoundland, and Quebec, lat. about 48 deg. ?

Prague, Dreſden, Cracow, and Belle-Iſle, lat. about 52 deg. ?

Dublin, York, Hamburgh, and Thorn, lat. about 54 deg. ?

Edinburgh, Copenhagen, and Moſcow, lat. about 56 deg. ?

Orkney Iſles and Stockholm, lat. about 59 deg. ?

Bergen and Peterſburgh, lat. about 61 deg. ?

Archangel and Hecla, lat. about 65 deg. ?

Places ſituated in lat. 66½ deg. ?

PROBLEM XXV.

To find what other Day of the Year will be of th ſame Length with any given Day.

Bring the ſun's place for the given day to th meridian, and obſerve what degree it interſects then revolve the globe till ſome other degree o the ecliptic falls under the ſame point of the meri dian

n, which is the ſun's place for the day required ; l by comparing it with the calendar on the hori-
n, the correſponding day will appear.

EXAMPLES.

hat day is of the ſame length as the 20th of ch ?—Anſ. The 23d of September.

hat day is of the ſame length as Jan. 6— 28—March 9—April 30—May 22—June 11— 1—Auguſt 12—Sept. 16—Oct. 17—Nov. 14 d Dec. 17 ?

PROBLEM XXVI.

d upon what Points of the Compaſs the Sun ll riſe and ſet, in a given Latitude, upon any rticular Day.

ctify the globe for the aſſigned latitude ; find un's place in the ecliptic for the given day ; it to the Eaſtern verge of the horizon, and part of the mariner's compaſs then in contact the ſun's place is the point upon which the iſes on that particular day ; and by revolving lobe till the ſun's place touches the Weſtern of the horizon, the point on which the ſun will appear.

EXAMPLES.

n what points of the compaſs does the ſun nd ſet at London, lat. 51½, at the vernal and autumnal equinoxes?—Anſ. Exactly and Weſt points.

N. B. This anſwer will ſerve, at t of the year, for *any* place which is ſit torrid, or either of the temperate z latitude, of courſe, cannot exceed 66½ or South.

But it muſt be remarked, that the d verted to, are the only ones on whi poſſibly happen; for at all other ti year, the ſun at its riſing and ſetting r the Eaſt and Weſt points, in a gre degree, according to its declination and latitudes for which the globe may be will plainly appear by ſolving the foll tions. The greateſt receſs of the ſun fr and Weſt points, at its riſing and ſetti ſummer and winter ſolſtices. While t the Northern ſigns it riſes between t North, and ſets between the Weſt and N of the compaſs: and during the time th is in the Southern conſtellations it ri the Eaſt and South, and ſets between th South points of the compaſs. From t of this problem then, the pupil may lea the vulgar error of theſe perſons who ſ

¾, June 13; at Rheims, lat. 49¼, July t Carrickfergus, lat. 54¾, Aug. 13; at , lat. 49½, Sept. 9; at Rotterdam, lat. t. 28; at Leiceſter, lat. 52¾, Nov. 28; and leteuſe, lat. 50¾, Dec. 23.

PROBLEM XXVII.

w at what Hours of the Day the Sun will be Eaſt or Weſt, the Latitude of the Place and Day of the Month being given.

ify the globe for the given latitude; bring 's place to the meridian; ſet the index to fix the quadrant of altitude in the zenith, t to the Eaſtern point of the horizon, and e globe round till the ſun's place touch its ed edge; the hour to which the index then is the time when the ſun is due Eaſt: bring drant to the Weſtern point of the horizon, n the globe till the ſun's place touch its ed edge, and the hour to which the index is the time when the ſun is due Weſt. Or, lobe have a double hour circle, the firſt of rations will ſolve the problem; for, as the always due Weſt the ſame number of hours on, or mid-day, as it is due Eaſt *before* y, this coincidence is at once indicated by lex of a double-hour circle, *e. g.* ſuppoſe ſhould be due Eaſt at any place at 8, 9, or lock in the morning, the correſponding ould be 4, 3, and 2; and theſe would be iods when the ſun would be due Weſt on y.

EXAMPLES.

EXAMPLES.

At what time is the ſun due Eaſt at Londo 51½ North, at the vernal and autumnal equin —Anſ. Six o'clock in the morning.

At what time is the ſun due Eaſt at Kimb lat. 52½, Jan. 8? at Edinburgh, lat. 56, 10? at Stockholm, lat. 59, March 29? Auguſtin, in Florida, lat. 30, April 2? at Pl lat. 51, May 6? at Bannockburn, lat. 55¼; 25? at Londonderry, lat. 55, July 31? at mouth, lat. 50¼, Aug. 23? at Floudenfield 55½, Sept. 9? at Aix-la-Chapelle, lat. 51, O at Peterſburgh, lat. 60, Nov. 17? at lat. 42, Dec. 30?

PROBLEM XXVIII.

To find all thoſe Places which have the ſame, contrary Hours of the Day, with a given Pl

Bring the propoſed place to the brazen meri and obſerve what places are then exactly the Eaſtern ſide of that ſemicircle of the merid and all thoſe places have the ſame hour of day *.

To find thoſe places which have contrary h bring the aſſigned place to the meridian, an the index at 12; then turn the globe till the i points to 12 on the oppoſite ſide of the hour ci and all thoſe places which then lie under the Ea ſide of the upper ſemicircle of the meridian have oppoſite hours. Or the problem ma

---

* See page 34.

ſ

the following manner: Reckon 180 de-
:r Eaſtward or Weſtward on the equator,
iven place, and obſerve what places have
ongitude with the part of the equator
.; places ſo ſituated have oppoſite hours
propoſed. Again, the ſame anſwer may
btained: Obſerve the longitude of the
ace and find another in the oppoſite longi-
ſe longitude added to that of the given
. make 180 degrees: *e. g.* if the given
50° of *Eaſt* longitude, a place ſituated in
Veſt longitude will have oppoſite hours;
propoſed place has 30° of *Weſt* longitude,
hich is ſituated in 150° of *Eaſt* longitude
contrary hours, being 180°, or half the
ence of the earth, aſunder.

EXAMPLES.

laces have the ſame hour of the day as
—Anſ. Bourdeaux, Valencia, Oran, the
Iſlands, and part of the Gold Coaſt, nearly.
laces have oppoſite hours of the day to
iz?—Anſ. Madras, Pondicherry, Tran-
nd Candy in the iſland of Ceylon; thoſe
ing 180°, or half the circumference of the
m Vera Cruz.
places have the ſame hours of the day as
, Morocco, Algiers, Tunis, Calcutta,
ay, Pekin, Owhyhee, Panama, Aſtracan,
eo?
laces have oppoſite hours to the following
London, Edinburgh, Dublin, Paris, Ma-
bon, Amſterdam, Bruſſels, Bern, Vienna,
ome, Conſtantinople, Warſaw, Peterſburgh,

Bergen, Stockholm, Copenhagen, Tunis, (
and St. Helena?

PROBLEM XXIX.

A particular Place and Hour of the Day being
to find what Hour it is at any other Pla

Bring the place where the hour is aſſig
the meridian, without regarding the poſit
the globe, and ſet the index to the given
agreeably to the obſervations in the note
12th problem; then revolve the globe ti
other place comes in contact with the me
and the index will ſhew the hour at that plac
alſo at all others which are then under the
ſemicircle of the meridian.

N. B. When London, or any other place
is ſituated under the ſame meridian as Lond
the given place, the longitude of any othe
may be found by this problem. For, the ci
ſerence of the earth being 360 degrees, a
diurnal revolution performed in 24 hours, i
lows that one hour of time is equal to 15 d
of longitude, and ſo in proportion for any g
or leſs quantity: conſequently, a place whi
the ſun one, two, or three hours, before o
London, muſt be ſituated in 15, 30, or 45 d
of Eaſtern or Weſtern longitude; becauſe th
gitude on all modern Engliſh globes is rec
from the meridian of London.

When the aſſigned place is not London, c
one under the firſt meridian, the above proce
only give the number of degrees that inte

be

en the reſpective meridians of the given and
d place.

EXAMPLES.

at is the hour at Port-Royal in Jamaica when
mid-day at London?—Anſ. About ſeven
k in the morning.

at is the longitude of Port-Royal?—Anſ.
t 75. deg. Weſt.

at is the hour at Conſtantinople and Peterſ-
when it is noon at London?—Anſ. About
'clock in the afternoon.

at is the longitude of thoſe places?—Anſ.
t 30 deg. Eaſt.

en it is noon at Vera Cruz, what is the hour
dras?—Anſ. Midnight.

w many degrees intervene between their re-
ve meridians?—Anſ. 180 deg.

en it is noon at London, what is the hour and
are the reſpective longitudes of the following
s?

me, Alexandria, Rhodes, Aleppo, Iſpahan,
, Bombay, Madras, Calcutta, Hainan Iſle,
n, Ladrone Iſlands, Botany-Bay, New Britain,
Ireland, New Caledonia, New Hebrides, New
nd, St. Helena, Cape Verd Iſlands, the
bee Iſlands, Newfoundland, Quebec, and
co.

en it is four o'clock in the afternoon at
e, what time is it at Canton? and how many
es are their meridians from each other?

en it is ſix in the morning at Pico, what is the
at Botany-Bay, and how many degrees ſepa-
heir meridians?

When it is ſeven o'clock in the evening at Po Royal, Jamaica, what is the hour at Lond Corſica, Sardinia, Sicily, Candia, and Cyprus

PROBLEM XXX.

A particular Place and Hour of the Day b given, to find all thoſe Places where it is other given Hour.

Bring the given place to the braſs merid and ſet the index to the given hour *, then the globe till the index points to the other prop hour, and all thoſe places which are then in co with that ſemicircle of the meridian have hour required.

EXAMPLES.

When it is noon at Port-Royal in Jamaica, w is it 5 o'clock in the afternoon?—Anſ. At Lon and all other places which are ſituated under meridian of London.

When it is mid-day at London, where is i 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 o'clock, and n night? — Alſo, 11, 10, 9, 8, 7, 6, 5, 4 3 and 1 o'clock in the morning?

When it is 10 o'clock A. M. † at Pico, on the Azores, where is it noon?—Nine A. M Cape Farewell in Greenland, where is it half

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[*] See the note to the 12th problem.

[†] A. M. denote ante-meridiem, before noon; i. e. fore the ſun has arrived at the meridian.

M. * ?—Half paſt one, A. M. at Owhyhee, is it noon?—Otaheite, two A. M. where idnight?—Five, P. M. at Cape Comorin, is it eight P. M.? Three quarters paſt . M. at the Pelew-Iſlands, where is it three :s paſt one, A. M.?—Seven, A. M. at Phi- ıia, where is it five, A. M. and a quarter vo, P. M.?—Two, P. M. at the Mouth of ile, where is it mid-day and a quarter paſt ·ht?—One, P. M. Saldanha Bay, Weſt of the f Good Hope, where is it ten, P. M.?— ıy, Quebec, where is it midnight?—Mid- Bantam in the iſland of Java, where is it ıy?

PROBLEM XXXI.

' thoſe Places to which the Sun is vertical or in the Zenith on any given Day.

ıg the ſun's place for the aſſigned day to the an, and obſerve the degree of its declina- then turn the globe a complete revolution, l thoſe places which paſs under that degree meridian are thoſe required, which the ·will obſerve are ſituated in ſome part of the zone, whoſe latitude does not exceed 23½ s, either North or South.

ıay alſo be further remarked, that the inha- ı of thoſe places are aſcii or ſhadowleſs for ıy †.

M. poſt-meridiem, after noon; *i. e.* after the ſun :d the meridian.

e Art. 30. p. 26.

N. B. The reaſon why the ſun is never v to any place in either of the temperate or zones, is becauſe no part of the ecliptic, o annual path, extends beyond the tropics theſe comprehend the torrid zone.

EXAMPLES.

To what places is the ſun vertical at th mer ſolſtice ?—Anſ. Canton, Calcutta, Mecc Havannah, nearly.

What places have the ſun in their zenith winter ſolſtice, the vernal and autumnal equi and on the following days ?

Jan. 5, Feb. 7, March 14, April 26, M June 28, July 14, Aug. 12, Sept. 3, O Nov. 20, Dec. 11.

PROBLEM XXXII.

To find on what Days of the Year the Sun vertical or in the Zenith, to any given P the Torrid Zone.

Bring the aſſigned place to the meridian, w regarding the poſition of the ſphere, and the degree exactly over it; then turn the round, and obſerve the two points of the e which paſs under that degree of the mer and, finally, find by the calendar on the ho on what days the ſun is in thoſe points ecliptic; and they are the days required.

N. B. There are no parts of the earth have this property but ſuch as are actually ſi he torrid zone; and to every individual place this diſtrict, the ſun, as he paſſes and repaſſes his apparent annual motion, is twice a year rtical:

> There, each circling year,
> Returning ſuns and double ſeaſons paſs.
>
> THOMSON.

To thoſe places which are ſituated at the extreme int of the torrid zone, *i. e.* exactly under the pics, the ſun is reſpectively vertical only e a year, namely at the ſummer and winter ſtices.

EXAMPLES.

On what day of the year is the ſun vertical to Gallapagos, Quito, Macapa, at the mouth of river Amazon, St. Thomas, in the Gulf of inea, and Lawa, in Borneo?—Anſ. March 20, d Sept. 23.

On what days will the ſun be vertical at Mecca, ocha, Bombay, Gheriah, Goa, Candy in Ceylon, adras, Pelew Iſlands, Tinian, St. Helena, Aſcen-n Iſle, Cape Verd, Sierra Leona, Mexico, Vera uz, Campechy, Port Royal, Trinidad, Tobago, rbadoes, and St. Jago, in the Iſland of Cuba?

PROBLEM XXXII

To find thoſe Places to which the Sun is
any propoſed Day and Hour.

Find the ſun's place for the aſſigne
bring it to the meridian, without reg
poſition of the globe, and note the deg
declination. Bring the given place to
meridian, and ſet the index to the prop
then turn the globe, as in Problem 30
index points to 12 at noon *, and the p
is then under the degree of the ſun's
for the given day is the one required.

N. B. To ſolve this problem with t
facility poſſible, it is only neceſſary to
following directions. Place the index
propoſed hour, without regarding wh
circles is made uſe of; if the given tim
noon, turn the globe *Weſtward*; and i
afternoon hour, revolve the globe *Eaſt*
the index points to 12; the place whi
under the ſun's declination for the given
as above ſtated, be the one required.
will, however, it is imagined, compr
nature of this problem better by working
ing to the following rule.

res; then if the given hour be before noon, ve the globe *Weſtward* till the index points e ſaid 12; and if the propoſed time be in fternoon, turn the globe *Eaſtward* till the points to the ſame 12; the place which is under the ſun's declination for the given day be the one required.

EXAMPLES.

here is the ſun vertical when it is three-ters paſt four o'clock A. M. Oct. 8, at the f Alderney in the Engliſh Channel?—Anſ. atavia in the Iſland of Java.

here is the ſun vertical when it is ſix o'clock e afternoon at Mexico, on Jan. 1?—9 in the ing, Dublin, Feb. 12?—45 minutes paſt 6 e morning, Cairo, March 20?—2 in the noon, Canton, April 8?—7 in the morning, le, May 15?—7 in the morning, Medina, er ſolſtice?—5 in the afternoon, Port-Royal, ica, July 28?—4 in the afternoon, Paris, 23?—8 in the morning, St. Domingo, 1?—6 in the morning, Cape Comorin, 18?—3 in the afternoon, Vera Cruz, Nov. 16? in the morning, Guam, Dec. 24?

PROBLEM XXXIV.

be Latitude of a Place, Day of the Mo
Hour of the Day, being given, to find
Places where the Sun is then Riſing, S
on the Meridian; alſo, thoſe Places a
illuminated at that Time, and thoſe
in Obſcurity.

Find the place where the ſun is ver
propoſed time, by problem 33; recti
for that latitude, and bring the place
dian ; then all the places that are o
Weſtern ſemicircle of the horizon,
riſing at that time ; thoſe in the *Eaſ*
have it ſetting ; to thoſe who live u
ſemicircle of the meridian, it is
noon, if they have any day at that
who live under the lower ſemicircl
dian it is midnight, if they have
that time ; in all thoſe places that
below the Weſtern ſide of the horiz
is juſt beginning in the mornin
breaks ; and in all thoſe places tha
below the Eaſtern ſide of the horiz
is ending, and total obſcurity co
thoſe places whoſe depreſſion bel
does not exceed 18 degrees hav
twilight ; and all thoſe lower
have dark night.

All thoſe places that are above
the ſun above them, juſt ſo m
themſelves are diſtant from the
height may be known by fixin

e zenith, and laying it over any e.

EXAMPLES.

n the 26th of April, at three quarthe morning, find all thoſe places is then riſing, ſetting, or on the where it is daylight, twilight,

it that time vertical to Madras; it ght to the greateſt part of Europe, ica. In North and South America it, except where it is twilight. The the Canary, Madeira, and Azore rain Coaſt, and the Iſle of St. Heleg to the Fox Iſlands and the Weſtern aledonia. It is noon at Pondicherry, eylon, and midnight at Vera Cruz. iſterre, on the 13th of May, at ſix afternoon, find the places where it lark night, and twilight; where the nd ſetting; where it is noon, and dnight.

OBLEM XXXV.

once upon the Globe by Inſpection, of the Variety in the Length of Days a particular Latitude being given.

globe for the aſſigned latitude; bring of Cancer to the meridian; then parallels of North latitude from the tropic of Cancer, which repreſent diurnal arches or days in ſummer;

PROBLEM XXXIV.

The Latitude of a Place, Day of the Month, an Hour of the Day, being given, to find all thoſ Places where the Sun is then Riſing, Setting, o on the Meridian; alſo, thoſe Places which ar illuminated at that Time, and thoſe which ar in Obſcurity.

Find the place where the ſun is vertical at th propoſed time, by problem 33; rectify the glob for that latitude, and bring the place to the meridian; then all the places that are oppoſite to th *Weſtern* ſemicircle of the horizon, have the ſu riſing at that time; thoſe in the *Eaſtern* ſemicircl have it ſetting; to thoſe who live under the uppe ſemicircle of the meridian, it is 12 o'clock a noon, if they have any day at that time; to thoſ who live under the lower ſemicircle of the meridian it is midnight, if they have any night a that time; in all thoſe places that are 18 degree below the Weſtern ſide of the horizon, the twiligh is juſt beginning in the morning, or the da breaks; and in all thoſe places that are 18 degree below the Eaſtern ſide of the horizon, the twiligh is ending, and total obſcurity commencing. Al thoſe places whoſe depreſſion below the horizo does not exceed 18 degrees have the benefit o twilight; and all thoſe lower than 18 degree have dark night.

All thoſe places that are above the horizon hav the ſun above them, juſt ſo much as the place themſelves are diſtant from the horizon; whic height may be known by fixing the quadrant o

altitud

itude in the zenith, and laying it over any
rticular place.

EXAMPLES.

At London on the 26th of April, at three quar-
rs paſt ſix in the morning, find all thoſe places
here the ſun is then riſing, ſetting, or on the
eridian; alſo where it is daylight, twilight,
r dark night.

The ſun is at that time vertical to Madras; it
then day-light to the greateſt part of Europe,
ſia, and Africa. In North and South America
is dark night, except where it is twilight. The
n is riſing to the Canary, Madeira, and Azore
ands, the Grain Coaſt, and the Iſle of St. Hele-
; and ſetting to the Fox Iſlands and the Weſtern
rt of New Caledonia. It is noon at Pondicherry,
adras, and Ceylon, and midnight at Vera Cruz.

At Cape Finiſterre, on the 13th of May, at ſix
clock in the afternoon, find the places where it
day-light, dark night, and twilight; where the
n is riſing and ſetting; where it is noon, and
here it is midnight.

PROBLEM XXXV.

obſerve at once upon the Globe by Inſpection, the Occaſion of the Variety in the Length of Days and Nights, a particular Latitude being given.

Rectify the globe for the aſſigned latitude; bring
e firſt point of Cancer to the meridian; then
ſerve all the parallels of North latitude from the
uator to the tropic of Cancer, which repreſent
e length of diurnal arches or days in ſummer;

remark again all the parallels of South latitu from the equator to the tropic of Capricorn, wh repreſent the length of diurnal arches or days winter; and the reaſon of the difference betw the length of the days in ſummer and thoſe winter will be ſelf-apparent to the moſt comm apprehenſion.

N. B. The daily rotation of the earth * ca the uniform ſucceſſion of light and darkneſs; its annual motion occaſions the difference of length of the days and nights, and the grat viciſſitude of the ſeaſons:

Theſe, as they change, ALMIGHTY FATHER, th
Are but the *varied* GOD. The rolling year
Is full of Thee. Forth in the pleaſing SPRING
THY beauty walks, THY tenderneſs and love.
Wide fluſh the fields; the ſoftening air is balm;
Echo the mountains round; the foreſt ſmiles;
And every ſenſe, and every heart is joy.
Then comes THY glory in the SUMMER-MONTHS
With light and heat refulgent. Then THY ſun
Shoots full perfection thro' the ſwelling year:
And oft THY voice in dreadful thunder ſpeaks;
And oft at dawn, deep noon, or falling eve,
By brooks and groves, in hollow-whiſpering gales.
THY bounty ſhines in AUTUMN unconfin'd,
And ſpreads a common feaſt for all that lives.
In WINTER awful THOU! with clouds and ſtorms
Around THEE thrown, tempeſt o'er tempeſt roll'
Majeſtic darkneſs! on the whirlwind's wing,
Riding ſublime, THOU bidſt the world adore,
And humbleſt Nature with thy Northern blaſt.
Myſterious round! what ſkill, what force divine,
Deep felt, in theſe appear! a ſimple train,
Yet ſo delightful mix'd, with ſuch kind art,
Such beauty and beneficence combin'd;

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* See page 5.

unperceiv'd, ſo ſoft'ning into ſhade;
ll ſo forming an harmonious whole;
as they ſtill ſucceed, they raviſh ſtill.

THOMSON.

PROBLEM XXXVI.

d on what Day the Sun begins to ſhine conſtantly,
how long, at any given Place in either of
Frigid Zones.

erve the diſtance of the aſſigned place from
le, and reckon an equal number of degrees
the equator towards the ſame pole; then
e the globe, and note the two points of the
c which paſs under that degree; laſtly,
y the calendar on the horizon, on what days
year the ſun is in thoſe points of the
ic: the day neareſt the vernal equinox is the
which the ſun begins to ſhine conſtantly in
orthern frigid zone, and the ſpace of time
en the two days is the duration of ſun-ſhine.

EXAMPLES.

what day does the ſun begin to ſhine con-
, and what is the time of its duration, at
orth pole?—Anſ. The vernal equinox; du-
ſix months.

uired when the ſun begins to ſhine conſtantly,
e time of its duration, at the following places,
he following latitudes: the South pole; that
f Bhering's Streights * ſituated in lat. 66½

deg.

---

ering was caſt away and died in 1741, at the iſland
ears his name, near the N. E. part of Aſia. Bhering's
s ſeparate Aſia from America.

To find the Latitude of thoſe Places in t Frigid Zone, where the Sun begins t ſtantly, on any Day between the ver and the Summer Solſtice, or in the Sou Zone, on any Day between the Autum and the Winter Solſtice.

Find the ſun's declination for the a ſubtract it from 90 deg. and the remai the latitude of thoſe places where the ſ ſhine conſtantly.

N. B. The ſame number of degr from the South pole, and the globe b round, will ſhew the latitude of all t where the ſun then begins to diſappear.

EXAMPLES.

PROBLEM XXXVIII.

in what Parallel of Latitude the Sun does
ſet for any aſſigned Number of Days, not
ding 180, *in the Northern Frigid Zone.*

con as many degrees on the ecliptic, com-
g at the firſt degree of Cancer, as amount
the number of given days; bring the point
the counting terminates to the meridian;
e how many degrees are intercepted between
the North pole; and, finally, reckon the
umber of degrees on the meridian from the
r towards the ſame pole, and that will ſhew
quired parallel of latitude.
B. In ſolving this problem for the Southern
zone, the firſt degree of Capricorn muſt be
yed.

EXAMPLES.

what parallel of latitude does the ſun not ſet
days?—Anſ. In the 67th.

d the parallels of latitude in which the ſun
not ſet for 30, 40, 50, 60, 70, 80, 90,
120, 130, 140, 150, 160, 170, and 180

PROBLEM XXXIX.

d the Diſtance between any Two Places on the Globe.

ke the diſtance between the two aſſigned
s with a pair of compaſſes, and meaſure that

ſpace upon the equator, or the braſs meridi this will ſhew the diſtance in degrees; whic multiplied by 60 will give the geographi by 70, the Engliſh miles which the ſaid pla diſtant from each other. Or the problem n ſolved by laying the quadrant of altitude fr place to the other and counting the num degrees which are intercepted between them converted into miles will be the anſwer re If the given places happen to be both ſituate the ſame meridian, bringing them to th meridian, and counting the number of d between them, will be the ſhorteſt way of their diſtance.

N. B. 69½ miles make a degree, Engliſ ſure; but, to facilitate the above-mentioned metical operation, Dr. Watts * and others mend the learner to multiply by 70.

EXAMPLES.

What is the diſtance between London and —Anſ. About 3 degrees, or 210 Engliſh mi 180 geographical miles.

What is the diſtance between London an drid; London and Jamaica; Liſbon and Co tinople; Moſcow and Damaſcus; Dubli Louiſburgh; Pekin and Canton; Calais and louſe; London and St. Helena; the tropics arctic circles; the poles?

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* See Nov. 25, 1748, Chron. Tab.

PROB

PROBLEM XL.

find the Angle of Poſition between any two Places, i. e. *an Angle formed at one aſſigned Place by the Meridian of that Place, and a great Circle paſſing through that and another given Place.*

Rectify the globe for the latitude and zenith of e of the given places, over which fix the qua- nt of altitude, and lay its edge to the other; e end of the quadrant will then ſhew, by the riner's compaſs on the horizon, the angle of ſition.

N. B. This operation is commonly, though y erroneouſly, ſuppoſed to give the *bearing* of e place from another, and is ſo expreſſed in ſome eatiſes on the uſe of the globes. But to ſhew in e cleareſt manner the palpable miſtake of ſuch writers, we have only to fix on two places which e under the ſame parallel of latitude, namely, Madrid and Pekin, lat. 40 deg. Now theſe muſt always bear directly Eaſt and Weſt from each other. But if Madrid be brought to the zenith, and the quadrant placed over it, and thence directed to the Eaſt point of the horizon, it will not follow the courſe of the 40th parallel of latitude, and lead the eye to Pekin, but to much more Southern places, very far diſtant from it, and which have a very different bearing, namely, the Iſle of Ceylon, &c. or if the quadrant be directed from Madrid to Pekin, this laſt place will appear to bear N. E. from Madrid. Again, the angle of poſition between the meridian of Cape Clear, in Ireland, and St.

point of the compaſs, toward w
conſtantly ſail or travel, in ord
[illegible] place given. But as man
time to confound the terms,
in this place to eſtabliſh a clea
angle of poſition between any
as we have juſt remarked, is o
of a great circle (the quadrant
the purpoſe), may be called the
graphical ſenſe; and the bea
rhumb line (as is the caſe wit
denominated their bearing in a

EXAMPL

What angle of poſition does
ſing through London and Jeruſa
meridian of London? or wha
Jeruſalem from London, in a
—Anſ. 68 deg. South-Eaſterly
Eaſt toward the South: E. S

PROBLEM XLI.

d the Bearing of one Place from another in a nautical Senſe.

e bearing of one ſea-port from another, in a *al ſenſe*, is determined by a kind of ſpiral, a rhumb-line, paſſing from one to the other, to make equal angles with all the meri- through which it paſſes; of courſe, if both are ſituated on the ſame parallel of latitude, bearing, as we have obſerved in the N. B. to oth problem, is either Eaſt or Weſt from other; if they are upon the ſame meridian, ear North and South from one another; if ie upon a rhumb-line, their bearing is the with it; if they do not, notice to which -line the two places are neareſt parallel, hat will ſhew the bearing ſought.

EXAMPLES.

e courſe from Cape St. Vincent in Portugal, . Salvador among the Bahama Iſlands, is y W. by S. The courſe from Barbadoes to Finiſterre, N. E. by E. or thereabouts. The ng of the Lizard point from the Iſland of udas is nearly E. N. E. and that of Bermudas the Lizard is W. S. W. both nearly upon ame rhumb-line, but in contrary directions.

. B. The rhumb-lines were formerly deli- ed on ſome conſpicuous part of the watery ce of moſt terreſtrial globes, namely, in the ntic and Pacific oceans; but, to avoid confuſion, they have lately, at leaſt on M. globes [*], given place to the ſeveral eminent circumnavigators They are 3 ber, and coincide with the points of the of the horizon: and, hence mariners d the rhumbs by the ſame names as the poi compaſs. To find the bearing of one pl another by a rhumb-line, the pupil has, th only to find the correſponding point on th ner's compaſs on the horizon: *e. g.* The line which on Mr. Adams's globe paſſes th Bermudas to the Lizard, is the ſecond *from th towards the North*; now by inſpecting the co for its coinciding point, it will appear t E. N. E. which ſhews the bearing of the Li from Bermudas.

The *Fleur-de-lis* [†] denotes the North rhu its oppoſite is the South rhumb; and the equa repreſents the Eaſt and Weſt rhumbs.

PROBLE

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[*] See page 4.

[†] This is an ornament inſerted alſo in maps to denote North, and it therefore regulates the ſituation of all other points. The North part of the mariner's com was marked by its immortal author [‡] with this beaut flower, in compliment to France. This happened in co quence of the Neapolitan monarch being a younger branc the royal family then (1302) upon the throne of that kingd The fleur-de-lis not only formed a part of the arms of kings of France, but was employed in the decorative em liſhments of the crown itſelf. A late melancholy eve renders a line of our great bard on this ſubject ſtrikin appropriate:

Cropp'd are the *flower-de-luces* in his arms.

[‡] Flavio de Gioia, a native of Amalfi in Naples. See Arith. Q Art. Navigation.

[§] See January 21, 1793, Chron. Tab.

Edw

PROBLEM XLII.

how many Miles make a Degree of Longitude in any given Parallel of Latitude.

as been before obſerved §, that the number of
in a degree of longitude, varies according
parallel of latitude, theſe laſt becoming leſs
ſs the farther they recede from the equator
ls either pole, and conſequently each degree
e circles muſt be proportionably leſs alſo;
is reaſon, an entire circle of 360 *degrees* in the
ty of the poles will not make above 360
and, in a ſtill nearer approximation, not
ıy *furlongs* or even *feet*.

ırd the IIId. added the fleur-de-lis to the arms of
d:

reat Edward with the lilies on his brow
om haughty Gallia torn.

GRAY.

e the union of the Britannic kingdoms, January 1,
the fleur-de-lis has given place to the ſhamrock, the
of the Iriſh nation.
en Anne granted to Sir Cloudeſly Shovel * for his
a cheveron between two fleurs-de-lis, and a creſcent †
, to denote three victories that he had gained; two over
ench, and one over the Turks.
ler ſpecifies thirty-four ſpecies of flower-de-luce, among
the Perſian is greatly eſteemed for the ſweetneſs and
of its variegated flowers, which are in perfection in
ıry, or the beginning of March.

* e October 22, 1707, Chron. Tab.

† he Turkiſh ſymbol, or rather that of the city of Byzantium,
bore this device from all antiquity; as appears from various
.

§ See Art. 24. p. 23.

To find the proportion which a degree o gitude on any leſſer parallel of latitude bea degree of longitude on the equator, or how miles make a degree of longitude in any p parallel of latitude, take off any number grees, ſuppoſe 15, the ſpace between tw circles or meridians, from the aſſigned with a pair of compaſſes, and apply that to the equator, obſerving how many deg makes there; after which uſe the followi arithmetical operation: as the number of d on the equator, is to the number in the la given; ſo is the number of miles (either ge phical or Engliſh) in one degree of the equ to the number of miles equal to a degree in aſſigned latitude.

EXAMPLES.

In the parallel of London, lat. 51½ deg. if ſpace between two meridian lines drawn at diſtance of 15 deg. of the equator, be taken a pair of compaſſes, and applied to the equa it will be found to contain 9¼ deg. Then 15 : 9¼ :: 60 : 37 geographical miles: or, as 9¼ :: 70 : 43$\frac{10}{15}$ Engliſh miles.

Required the number of geographical and gliſh miles in the parallels of latitude in which following places are ſituated: Cayenne, Trinid Martinico, Jamaica, Havannah, Cape St. Vinc Cape Finiſterre, Ratiſbon, Edinburgh, Archan North Cape, and Spitzbergen.

PROBL

BLEM XLIII.

tœci of any given Place *.

d place to the braſs meridian,
ed its latitude, ſeek the ſame
s in the oppoſite hemiſphere,
will be the Antœci required.
which are ſituated under the
ny Antœci.

XAMPLES.

its inhabitants the Antœci to
South Frozen ocean, which is
ſt meridian and in 51½ deg. of
Anſ. London.

to the following ſituations:—
S. lat—80° E. long. 14° S. lat.
S. lat.—30° E. long. 60° S. lat.
S. lat.—9° W. long. 38°¾ S. lat.
S. lat.—25° W. long. 15° S. lat.
19° S. lat.—150° W. long. 17°
ong. 20° N. lat.—150° E. long.
E. long. 20° N. lat.—7° W.
—18° E. long. 34°½ N. lat.—
½ N. lat.—56° E. long. 21°½

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ce Art. 30. p. 26.

turn the globe half a revolution of 18
which may be performed with great cor
remarking to what hour the index point
given place is under the meridian, and
the ſphere till the index points to the opp
then will the place under the ſame deg
meridian be the Periœci to the one pro

This problem may be ſolved by an e
metical operation. For as the Periœci m
the circumference of the globe, or 18
by ſubtracting the longitude of the g
from this number of degrees, the longit
required place will be obtained on th
ſide of the firſt meridian; *e. g.* ſuppoſe
place to be ſituated in 40° E. longitu
deducted from 180° will leave 140, th
gitude of the place ſought; and the lati
ſame with that of the given place.

N. B. If there were inhabitants exa
Poles, they would not have any Periœci

Find the Periœci to the following ſituations: —176°½ E. long. 40°½ N. lat.—150° W. long. 60° N. lat.—166° E. long. 15° N. lat.—108° W. long. 19° N. lat.—100° W. long. 14° N. lat.—104° E. long. 18° N. lat. 100° E. long. 33°½ S. lat.—124° W. long. 21°½ S. lat.—110° E. long. 55° S. lat.—30° W. long. 34° S. lat.—140° W. long. 22° N. lat.—64° W. long. 40° N. lat.—150° W. long. 40° N. lat.

PROBLEM XLV.

To find the Antipodes of any aſſigned Place *.

Seek the Antœci of the given ſituation, and the Periœci of this will be the Antipodes, or point of the globe diametrically oppoſite, to the firſt place. Or in a more familiar way: bring the given place to the meridian and obſerve its latitude; turn the globe half a revolution, or 180 degrees; then find in the oppoſite hemiſphere to that in which the given place is ſituated a latitude equal to its own, and that is the antipodal ſpot required. The Antipodes may moreover be obtained by bringing the propoſed place to any part of the horizon, and looking at the oppoſite point of the horizon, where they will be found. By the laſt ſolution of this problem it plainly appears, that a place and its Antipodes have the ſame horizon; and alſo, by turning the globe either way, it will be found, that as the one place riſes above, the other deſcends below the horizon; and conſequently, that every appearance is exactly the reverſe in one place to that which it is in the other, as we have before obſerved, Art. 29, Page 25.

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* *See Art.* 30. p. 26.

N. B. This problem, like the laſt,
ſolved by a familiar arithmetical operat
for a ſimilar reaſon: the pupil has,
only to ſubtract the longitude of the
ſituation from 180°, and the difference w
longitude of the antipodes to that place
oppoſite ſide of the firſt meridian: *e.*
given place be ſituated in 30° W. longi
one ſought muſt have 150° E. longitude.
the meridional line of this laſt till a latit
to that of the given place be found, bu
oppoſite ſide of the equator, will give
antipodal ſpot required *.

EXAMPLES.

What is the antipodal place to one ſit
180° of long. and 51°½ of S. lat. ?—Anſ.

Find the antipodes to the following ſit
—30° W. long. 34° N. lat.—104° E. lc
S. lat.—150° W. long. 60° S. lat.—54°
49° S. lat.—91°½ W. long. 22°½ S. lat.-
long. 60° S. lat. 10° E. long. 66° S. lat.-
long. 0° lat.—150° E. long. 40° S. lat.—
long. 52° N. lat.—160° W. long. 77° S

PROBLEM XLVI.

' where it is *Twilight: a Place and Time being aſſigned.*

When the ſun was down,
ıey juſt arriv'd by twilight at a town.
DRYDEN.

light, or crepuſculum, is the time from the
ıwn of the morning to the riſing of the ſun;
gain, between the ſetting of this luminary
e laſt remains of day. It is uſually computed
ımence and terminate when the ſun is about
rees below the horizon. The evening twi-
is beautifully pourtrayed by Maſon in the
ing lines, which Gray deems ſuperlatively
ent *.

thro' the Weſt, where ſinks the crimſon day,
twilight ſlowly ſails, and waves her banners gray †.

thout this twilight, the ſun's light would
r at its riſing, and diſappear at its ſetting,
taneouſly; and we ſhould experience a ſud-
ranſition from the brighteſt ſunſhine to the
undeſt obſcurity. The duration of twilight
ferent in different climates; and in the ſame
it varies at different periods of the year.
e have not any dark night, but conſtant twi-
at London, from the 25th of May to the
of July ‡; for during this ſpace the ſun is

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aſon's Life of Gray, vol. iii. p. 7. See alſo Wakefield's
n of Gray's Poems, p. 169.

' Twilight gray.'' MILTON.

ee White's Ephemeris.

never depreſſed more than 18 degrees below t horizon.

The word Twilight is ſometimes employed poetry to denote obſcurity or deeply ſhaded:

> When the ſun begins to fling
> His flaring beams, me, goddeſs, bring
> To arched walks of twilight groves.
>
> MILTO

Poetically, morning twilight is deſignated und the title of AURORA, the goddeſs of the mor ing, the harbinger of the riſing ſun; whom poe and artiſts * repreſent drawn by white horſes, in roſe-coloured chariot †, and with her roſy finge unfolding the portals of the Eaſt; pouring revivi dew upon the earth, and vivifying plants a flowers:

> AURORA ſheds
> On Indus' ſmiling banks the roſy ſhower.
>
> THOMSO

Twilight is produced by the ſun's refractio i. e. the variation of the rays of light from the direct courſe, occaſioned by the denſity of th atmoſphere, which, according to Locke, is a thi light, fluid, or ſpringy body, that encompaſſ the ſolid earth on all ſides.

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[*] In the famous picture of "Morning," by Guido, on ceiling at Rome, the ſun is repreſented in his chariot, wit Aurora flying before him ſhedding flowers.

[†] See the morn begins
Her roſy progreſs ſmiling.

MILTON.

Immen

the whole excited atmoſphere
s ruſhes o'er the ſounding world.
THOMSON.

is body of air that the clouds hover,
h, in their deſcent, they are broken
f rain to repleniſh the earth.

rs, turn'd to clouds, obſcure the ſky;
, diſſolv'd, the thirſty ground ſupply.
ROSCOMMON.

d the clouds in air, and bid them roll
ſeas aloft, from pole to pole.
YOUNG.

uds are ſometimes congealed by the
rth" to "haily ſhowers;" at other
are frozen into ſnow, according to the
grees of cold in the air.

es the winter's ſnow her airy birth,
s the virgin fleeces clothe the earth.
SANDYS.

he region of the air that

The thunder*,
ith red light'ning and impetuous rage,
w through the vaſt and boundleſs deep.
MILTON.

he air that birds are enabled to perform
tions.

---

is a ſudden diſcharge of ſulphureous or electrical
ed in the atmoſphere.

Iſ

———— If this ſupport
Were wanting, all the feather'd tribes
The uſeleſs wing.

Eu

Wind is nothing but a violent motion
air, produced by its rarefaction more in
than another; or a tract of the atmoſphere
from one place to another; hence the
called wind a flowing wave of air; a
ſion, or ſtream of air. See page 14.

The atmoſphere is generally ſaid to ex
the height of about 45 miles from the
ſurface, where it is more denſe than at an
tance from it, becoming more rare in prop
to its altitude. Its benefits to man are co
ſurate with his very being, ſince without
element neither he nor any other terraq
animal could exiſt, as is plainly proved by exp
ments made by the air pump*; a machine
which air can be exhauſted from certain veſſ
prepared for the purpoſe; when the death of an
mals ſo expoſed inevitably enſues.

To ſolve this problem, rectify the globe for th
place to which the ſun is vertical at the give
hour of the propoſed day, by Problem 33; fi
the quadrant over the zenith; move it ſlowl
round the globe betwixt it and the horizon, and
in its courſe, take notice what places lie betwee
the extremity of the quadrant and the upper ſu
face of the horizon (a ſpace of 18 deg.) for a
ſuch have then twilight.

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* See Scientific Dialogues, Converſation 2d, vol. iv. a
Boyle, Chron. Tab,

Th

operation can only be performed, as above , with a quadrant which has what we have a crepuſculum graduation *; or with an nt called a quadrant of depreſſion, ſimilar uadrant of altitude, but made ſo as to reſt upper ſurface of the wooden horizon, and , which is graduated on one ſide, falls n ſuch a manner that the degrees of de- or diſtance below the horizon may be eaſily aſcertained.

lve this problem with a common quadrant, the globe for the antipodes of the place to he ſun is vertical; and, having fixed the t over the zenith, carry it round, and what places are within 18 degrees above izon, and theſe will be found to be the were between the extremity of the quadrant upper ſurface of the globe in the former l.

EXAMPLES.

hat place is it twilight on June 4, when it o'clock in the afternoon at London?—Anſ. Southern part of Siberia; great part of y; the Eaſtern part of Arabia; the Eaſtern f Africa; Moſambique Channel; at the f Good Hope; and at Otaheite, and moſt other Society Iſlands.

re is it twilight when it is noon at London, —one o'clock in the afternoon, Feb. 18— n the afternoon, March 24—three in the on, April 17—four in the afternoon, May

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* See Quadrant, Art. 20, p. 21.

27—five in the afternoon, June 8—ſix noon, July 6—five in the morning, ſix in the morning, Sept. 13—ſeven i ing, Nov. 17—midnight, Dec. 1 ?

PROBLEM XLVI

To find when the Morning Twilight when the Evening Twilight ends, a Place, on a propoſed Day.

Rectify the globe for the aſſigned pl of the month, by the 11th and 12th fix the quadrant over the zenith, and the Eaſtern verge of the horizon; t globe till the ſun's place comes in cont 18th degree of the crepuſculum gradu quadrant, and the index will point to which the twilight begins at the pr on the given day. A ſimilar operatio on the Weſtern ſide of the horizon wil the twilight ends.

If the globe have a double hour circ operation ſerves for the beginning an twilight. Or, the termination of twi found by reckoning the ſame number o after ſix, as it commences before ſix; always equal to each other, and whe gether give the whole duration of twi given place and day.

To perform this problem with a co drant, rectify the globe, &c. as befo bring the degree which is directly op place * to the quadrant of altitude, ſo that it es juſt 18 degrees (then it is evident that the real place will be depreſſed 18 degrees below orizon), and the index will ſhew the begin- or ending of twilight, according as the qua- is directed to the Eaſtern or Weſtern ſide e horizon; or both will be exhibited at the time if the globe have a double row of hours he hour circle.

EXAMPLES.

hen does twilight apppear at London, Jan. 15? ſ. About a quarter before ſix in the morning +.

t Paris, Feb. 10—at Kenſington, March 8—one, Jan. 1—at Southwark, May 24—at Car-ſergus, June 14—at Jeruſalem, July 5—at ord-Haven, Aug. 7—at Rouen, Sept. 14—elvoetſluys, Oct. 21—at London, Nov. 29—lois, Dec. 23?

PROBLEM XLVIII.

nd the Duration of Twilight at the North le, and likewiſe how long Night continues re after Twilight or Refraction totally ends.

ing the North pole to the zenith; that is, e equator be in the horizon; turn the globe

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* By referring to the 9th problem the pupil will find the ern and Southern ſigns placed in oppoſition. Page 39.

+ See White's Ephemeris.

till ſome part of the ecliptic, counted
firſt degree of Libra, or ſun-ſet, fal
under 18 degrees of the meridian, in S
nation, which will be in 20 degrees
the ſun's place on the 12th of Novemb
day when twilight ends ; then turn the
ſome other point of the ecliptic meets
degree of South declination, which
degrees of Aquarius, the ſun's place f
29, till which time it would be tota
under the North pole were it not for
afforded by the moon * and the auror
from this period twilight begins agair
tinues till the ſun enters Aries, March
a day of ſix months commences at the N

EXAMPLE.

Find the duration of twilight at the
and how long night continues there aft
or refraction totally ends.

N. B. The aurora borealis, North
or ſtreamers, is a kind of meteor wh
in the Northern parts of the heavens,
winter time, and in froſty weather
evenings ; aſſuming ſeveral forms ar
variety of tints, eſpecially thoſe of
purple hue. Its appearance is indeed n
rally known, even in this country, th
particular deſcription is not requiſite :
be juſt obſerved, that as we only ſee
mities of this brilliant phenomenon, w
but a faint idea of its real ſplendor i
regions, where it appears in perfection,
a great ſolace to the inhabitants amidſt
of the long winter nights. In ſom

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* See page 16.

rticularly, this beautiful meteor is con-
ibited from October to Chriſtmas, and
tions in thoſe parts are remarkably

Ellis, who wintered on the Weſtern
dſon's Bay in North America, obſerves,
oner does the ſun diſappear in thoſe
an the aurora borealis diffuſes a thou-
nt lights and colours over the whole
f heaven, with ſuch reſplendent beauty,
he full moon cannot eclipſe their luſtre.
r a long time a matter of doubt whether
r made its appearance in the Southern
; but Mr. Forſter, who went round
with Captain Cook, aſcertained the fact,
773, in lat. 58° South, though it ap-
h phenomena ſomewhat different from

ing the cauſe of the aurora borealis,
ctures have been formed; but that which
ſupported by the moſt ſpecious reaſon-
s its origin to electricity.
poſed, that moſt of the extraordinary
d appearances in the ſkies, related as
y hiſtorians, *e. g.* battles, and the like,
bably enough reduced to the claſs of
eales. In certain ſtates of the atmo-

" Fierce fiery warriors fight upon the cloud
" In ranks and ſquadrons and right form of

The aurora borealis which appeared in 1715-16, and by its brilliancy attracted un attention, was, by the vulgar, conſidered as ing the introduction of a foreign race of prin Theſe ſuperſtitions are well delineated by th of the ſeaſons in the ſubſequent lines:

From look to look, contagious thro' the crow
The panic runs, and into wond'rous ſhapes
Th' appearance throws: armies in meet array,
Throng'd with aërial ſpears and ſteeds of fire,
Till the long lines of full-extended war,
In bleeding fight commixt, the ſanguine flood
Rolls a broad ſlaughter o'er the plains of heaven.
As thus they ſcan the viſionary ſcene,
On all ſides ſwells the ſuperſtitious din,
Incontinent, and buſy Frenzy talks
Of blood and battle, cities overturn'd,
And late at night in ſwallowing earthquake ſunk,
Or hideous wrapt in fierce aſcending flame;
Of ſallow famine, inundation, ſtorm;
Of peſtilence, and every great diſtreſs;
Empires ſubvers'd, when ruling Fate has ſtruck
Th' unalterable hour: even Nature's ſelf
Is deem'd to totter on the brink of time.
Not ſo the man of philoſophic eye,
And inſpect ſage; the waving brightneſs he
Curious ſurveys, inquiſitive to know
The cauſes and materials, yet unfix'd,
Of this appearance, beautiful and new.

THOMSON's *Aut*

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* George I. came to the Britiſh crown Auguſt 1, 1714,
e demiſe of Queen Anne, the laſt of the Stuart family.

PROBLEM

PROBLEM XLIX.

all thoſe Places in which a ſolar Eclipſe
be viſible, a particular Day and Hour being
r.

ll the phenòmena of the heavens, there are
hich engage the attention of mankind more
lipſes of the ſun and moon; and to thoſe
unacquainted with aſtronomical principles,
appears more extraordinary than the accu-
ith which they can be predicted. In the
iges of antiquity, before ſcience had en-
ed the world, appearances of this kind were
ly regarded as alarming deviations from the
ıed laws of nature, and but few, even
philoſophers themſelves, were able to ac-
r them. To attain this knowledge, formed
of Virgil's animated and much-admired
phe to the Muſes, in the ſecond book of
rgics:

ach me the various labours of the moon,
d whence proceed th' eclipſes of the ſun.
DRYDEN.

ength, when men began to apply them-
to obſervations, and the celeſtial motions
etter underſtood, theſe phenomena were
to depend upon a regular cauſe, and to
of a natural and eaſy ſolution. There are,
r, nations that ſtill entertain the moſt
tious notions concerning them, particularly
xicans and Chineſe, whoſe conduct on thoſe
ns is well deſcribed in the following lines:

Thus when the infant moon her circling ſphere
Wheels o'er the ſun's broad diſk, her ſhadow
On earth's fair boſom; darkneſs chills the fiel
And dreary night inveſts the face of heaven.
Reflected from the lake full many a ſtar
Glimmers with feeble languor: India's ſons
Affrighted in wild tumult rend the air.
Before his idol god with barb'rous ſhriek
The Brachman * falls: when ſoon the eye of
Darts his all-cheering radiance, from the gloo
Emerging. Joy invades the wondering crowd,
And acclamation ruſhes from the tongues
Of thouſands, that around their blazing pile
Riot in antic dance and diſſonant ſong.

Of theſe ſuperſtitious apprehenſions Co very ſeaſonably availed himſelf, in the year when being driven to the iſland of Jamaica, diſtreſſed for proviſions, he was there refuſe lief: but upon menacing the natives with a pl and predicting an eclipſe as a preſage of it, w happened in conformity to his prediction, the rified barbarians inſtantly hurried with abun ſupplies, which, imploring forgiveneſs, they l at his feet.

An eclipſe of the ſun is an occultation or hidi of that luminary's body from our ſight, occaſione by an interpoſition of the moon between the eart and ſun. On this account it is ſometimes calle an eclipſe of the earth, ſince the light of the ſu is concealed from the earth by the moon, who ſhadow involves a part of the earth. It muſt b here obſerved, that all opaque or dark bodie when they are expoſed to the light of the ſu

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* Bramin, an Indian philoſopher or prieſt.

ca

aſt a ſhadow behind them in an oppoſite direction. Now the moon being a ſpherical body of this kind, and vaſtly inferior to the ſun in point of ize, the figure of her ſhadow, of courſe, is that of a cone; and when it falls upon any part of the earth, the inhabitants of that part will be involved in darkneſs, and the ſun will ſeem to them to be eclipſed as long as the ſhadow covers them. But as the moon is much leſs than the earth, and its hadow can extend over but a ſmall portion of the earth's ſurface, there will be total darkneſs only in that ſpace where the ſhadow falls; and in the circumjacent places, the inhabitants will ſee a greater or leſs part of the ſun's diſk obſcured, according as they are nearer to or further from the ſhadow: ſo that eclipſes of the ſun are not univerſal, but always confined to particular places, that is, none of them are ſeen throughout the whole hemiſphere which the ſun is then above; the moon's diſk being much too little, and too near the earth, to hide the ſun from the whole diſk of the earth. The moon's dark ſhadow can only cover a ſmall portion of the earth's ſurface; but her partial ſhadow, or penumbra, may at the ſame time cover a circular ſpace of about 4,900 miles in diameter, *i. e.* about 14,700 miles in circumference, within which the ſun is more or leſs eclipſed as the places are nearer to or further from the centre of the penumbra. Hence it is evident, that an eclipſe of the ſun does not appear the ſame in all parts of the earth in which it is viſible; being *total* in one place, while in another it is only *partial*. Nor does it happen at the ſame time in all places where it is viſible; but appears more early to the Weſtern parts, and later to the Eaſtern; as the

[illegible] that the darkneſs which fell
[illegible] Saviour's crucifixion could
[illegible] a natural or regular
[illegible] was put to death at th
[illegible] that feſtival was alwa
[illegible] the FULL MOON.

The ſun beheld it:—No; the ſhock
[illegible] *midnight* veil
[illegible] ſuch as *nature* n
A [illegible] ſhudder'd to beho
A [illegible] a dread eclipſe (wi
Oppoſing ſpheres from her Creator's
Yo

Another reaſon, obſerves the ing
ſon, which of itſelf were ſufficient
darkneſs in queſtion to be ſuperna
in a regular or natural eclipſe of
moon's ſhadow, by which it is o
never cover more of the earth's ſ
ſpace of about 180 miles in diameter
and the ſhadow or darkneſs that the occ
or paſſes over that

n was not only the greateſt ever known,
; *total* for the ſpace of THREE HOURS*,
pread, at leaſt, the entire kingdom of
n intelligent tutor, ſays Mr. Adams †,
nany opportunities of obſerving to his
t nature, and philoſophy, which explains
mena of nature, do always agree with
REVELATION.
rd was crucified on the day before the
bath, which being kept on our Saturday,
xion conſequently happened on the pre-
riday; and muſt have taken place on
e 3d of April ‡, in the 33d year of his
that was the only *Friday* on which a
ull moon fell, from the twentieth to the
ear of our Saviour, reckoned from the
a of his birth.
l eclipſe of the ſun is a very curious

lides relates, that a ſolar eclipſe happened
ner's day, in the afternoon, in the firſt
ne Peloponneſian war, ſo great, that the
ared.
, who obſerved the total eclipſe of the
n happened on the 21ſt of Auguſt 1560,
a, in Portugal, obſerves, that the ob-
ns greater, or at leaſt more ſtriking and
han that of the night. It was ſo dark
ime, that he could ſcarcely ſee his hand;
he largeſt ſtars made their appearance for
ninute or two, and the birds were ſo
that they fell to the ground.

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xviii. 15.
. Eſſ. p. 182.
hron. Tab. April 3, 33.

There was a famous eclipſe of the ſun on 22d of April 1745, to obſerve which two Fr mathematicians came from Paris to London, the direction of the Royal Academy of Scie and were entertained by the members of our Ro Society, with whom they joined in making th obſervations.

Dionyſius of Halicarnaſſus mentions two to eclipſes of the ſun which occurred, one at the bi of Romulus, and the other at his death, in e of which the obſcurity was as great as in the mi dle of the darkeſt night. But this account, l that of the prodigies which were ſeen at the de of Cæſar *, deſerves but little credit. In anci times, every great event was ſaid to have b accompanied with comets or other portentous pearances, and eclipſes of the ſun in partic were always regarded as calamitous ómens, p ſaging the death of kings or ſome illuſtrious c racter. This ſuperſtition is frequently alluded by the poets, and is the foundation of the follo ing noble ſimile in the Paradiſe Loſt:

> ——— As when the ſun new riſen
> Looks through the horizontal miſty air
> Shorn of his beams, or from behind the moon
> In dim eclipſe diſaſtrous twilight ſheds
> On half the nations, and with fear of change
> Perplexes monarchs: darken'd ſo, yet ſhone
> Above them all the arch-angel.
>
> MILT

To ſolve this problem, find the ſun's ſituati in the ecliptic for the given day, and the particu place to which he is vertical at the propoſed tin

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* See Chron. Tab. Sept. 3, 1658.

'oblem 33; keep that ſpot under the braſs :ian, and elevate the pole, *i. e.* rectify the for the latitude of that place; to almoſt all parts of the earth which are then in the hemiſphere, the ſun, if the eclipſe be large, be more or leſs viſibly eclipſed.

EXAMPLES.

ppoſe the ſun ſhould be eclipſed at London on 1ſt of June, at half an hour after five in the noon, to what other places would the eclipſe ſible?—Anſ. To almoſt all Europe; to the h-Weſt part of Africa; and to the whole of h and South America.

ppoſe a ſolar eclipſe ſhould ever happen at lon, on each of the following days and hours, hat places would the ſame be viſible?

n. 21, nine o'clock in the morning—Feb. 6, in the morning—March 27, eleven in the ning—April 17, noon—May 21, two in the noon—June 10, three in the afternoon— 19, four in the afternoon—Aug. 8, five in afternoon—Sept. 1, ſix in the afternoon— 23, nine in the morning—Nov. 3, ten in morning—Dec. 29, eleven in the morning.

PROBLEM L.

To find all thoſe Places in which a lunar E will be viſible, a particular Day and Hour given.

An eclipſe of the moon is occaſioned by a di trical oppoſition of the earth between it and ſun. When the moon's entire light is interc ed, it is called total; when only part, par Eclipſes of the moon happen only when that pl is at the full; becauſe then only does the e intervene between the ſun and it; neither do occur every full moon, by reaſon of the obliq of its way with reſpect to the ſun's; but onl thoſe full moons which happen in the nodes, very near them. Were the moon's orbit in plane of the ecliptic, *i. e.* did ſhe move in ſame plane with the earth and ſun, there w be an eclipſe of the ſun every new moon or cha and an eclipſe of the moon every time ſhe wa the full; but theſe frequent and regular privat of light in the ſun and moon are prevented by latter's courſe being in an oblique direction to ecliptic, which ſhe only twice interſects in ev period. Accordingly, eclipſes, as we have obſerved, can only take place in the new mo that occur in theſe interſections, or nodes, or v near them.

The number of eclipſes of both luminaries any year, cannot be leſs than two, nor exc ſeven. They ordinarily amount to four, but ra to ſix.

In *aſtronomy* eclipſes of the moon determine ſpherical figure of the earth, and alſo that the er than the earth, and the earth than the In *geography*, they diſcover the longitudes rent places; for which purpoſe thoſe of the ıre the moſt uſeful, becauſe they are more ıtly viſible, and the ſame lunar eclipſe is of nagnitude and duration at all places where een. In *chronology*, both ſolar and lunar ı ſerve to determine exactly the time of any ent. Thus

in the dark eclipſe, with filial awe
e the all-gracious Parent of the ſpheres;
r diſtances and their proportion learn;
nding navigation; ſecuring
mariner thro' the tremendous waves *.

EUDOSIA.

ſolve this problem, find where the ſun is vert the given hour, bring that point to the , and rectify the globe for its latitude; then lipſe will be viſible in all thoſe places that en *under* the horizon: or find the place to the ſun is vertical at the aſſigned time, and r the globe for the antipodes of that place, ıe parts of the earth then *above* the horizon, oſe to which the eclipſe will be viſible.

comprehend the reaſon of theſe operations, ıpil has only to be reminded, that the moon, have juſt obſerved, muſt be directly *oppoſite* ſun whenever ſhe is eclipſed.

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* The terrific ideas which the ancients entertained con- ; eclipſes of the moon will be noticed hereafter. See Index.

EXAMPLES.

EXAMPLES.

Suppoſe there ſhould be a total eclipſe moon at London, on the 27th of May, a in the evening, what are the places to would be viſible in the middle?—Anſ. To the Eaſtern part of Germany, Pruſſia, Ruſſia, and Turkey. To all Aſia, except Northern and North-Eaſtern parts of Siberia, all Africa, except the North-Weſtern ſhore the Aſiatic Iſlands, and to New Holland.

Suppoſe a lunar eclipſe ſhould ever happ London at the following times, to what would the ſame be viſible?

January 30, ſix in the evening—Feb. 18, in the evening—March 18, eight in the eveni April 23, nine in the evening—May 2, te the evening—June 1, eleven in the eveni July 6, midnight—Auguſt 5, two in the m ing—Sept. 28, three in the morning—Oct four in the morning—Nov. 12, five in the ing—Dec. 13, ſix in the morning.

PROBLEM LI.

To find in what Latitude the longeſt Day is o given Length, leſs than twenty-four Hour

Bring the ſolſtitial point to the meridian, ſet the index to 12; then turn the globe Weſt till the index points at half the number of given; keep the globe from turning round axis, and ſlide the meridian up or down i notches, till the ſolſtitial point comes to th

ri

then that elevation of the pole will be the e.

EXAMPLES.

hat latitude is the longeſt day 16½ hours? . 51½ degrees.

l the latitude where the longeſt day is 12, |, 15, 16, 17, 18, 19, 20, 21, 22, 23, urs.

PROBLEM LII.

ce the Globe in the Situation of the Earth h reſpect to the Sun, at the Time of the mer Solſtice[*].

tify the globe 23½ deg. north latitude, which ſun's greateſt declination, or diſtance from uator, and conceive the ſun to be in the , the globe is then in the ſame ſituation, eſpect to the ſun, as the earth is at the time ſummer ſolſtice: and the following obſerva- may be verified by inſpection of the globe. thoſe places which lie within the north circle, it will be ſeen, are conſtantly above orizon; to the inhabitants of all theſe places, therefore, there is continual day; those places which lie within the Sout circle, are conſtantly below the horizon; places, therefore, there is continual night any place be brought under the braſs merid the hour index ſet to 12; and if the plac brought to the eaſtern ſide of the hori hour index will ſhew the time of ſun-ri ſun-ſetting at that place; whence the le the ſolſtitial, or longeſt day, may eaſily be See the note to Problem 12, p. 41. and the to Problem 17, p. 48.

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[*] he word *ſolſtice* is derived from the Latin words e ſun, and *ſto*, to ſtand, or continue in the ſame becauſe, when the ſun arrives at either of the ſolſti- ints in the heavens, it ſeems to *ſtand ſtill*, that make the length of the days neither increaſe nor ſe ſenſibly for about twenty days together, and then he towards the other; which happens twice a year, in mmer and winter. See Art. 12, page 12.

PROBLEM LIII.

To place the Globe in the Situation of the E the Time of the Winter Solſtice.

Rectify the globe to 23½ deg. South la which is the ſun's declination on the ſolſtiti the globe is now in the ſame ſituation as th is, with reſpect to the ſun, at the winter ſ The obſervations that ariſe from this view globe are as follow: 1. It will be appare the whole ſpace within the South polar ci in the ſun's light, and enjoys continual day. whole ſpace within the North polar circl the ſhade, and has continual night. 3. place be brought to the meridian, as in problem, the horary index will ſhew that t is equal to what the length of the night was place, at the ſummer ſolſtice; and that th of ſun-ſetting is the ſame as that of ſun-ri the ſummer ſolſtice; and, on the contrar hour of ſun-ſetting at the winter, is the ſ that of ſun-riſing at the ſummer ſolſtice.

be proper here to remark, that *all places*
rth do equally enjoy the benefit of the
pect of time, and are equally deprived of
at the *Poles* the day and night are alter-
lf a year each; at the *Equator* the day
12 hours, and the night the ſame; and
ermediate places (thoſe within the polar
xcepted,) where the days are from 24
6 months in length, according to the
and the nights the ſame, at the oppoſite
e days are always as much longer than
in ſummer, as they are ſhorter in win-
e it is clear, that in the whole courſe of
the ſun is ſeen at *all places an equal ſpace*

OF

WE have already obſerved[*], t
tial globe is a repreſentation o
On its ſurface are placed all the ſtar
and ſecond magnitude, and the moſt
reſt which are viſible. The ſtars are
conſtellations[†], under the forms of
or other figures, as are delineated o
which were invented by the ancien
and poets, and are ſtill retained for
diſtinction, and to avoid confuſion
the ancient and modern obſervations

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[*] See page 4.

[†] The word conſtellation, in aſtronomy,
blage or ſyſtem of ſeveral ſtars; and this g

h conſtellation are marked with Greek let-
, and ſome remarkable ones are called by
ular names. Thoſe ſtars which are not com-
nded in any conſtellation, are called unformed
and ſome which have a cloudy appearance,
nominated nebulæ. Thoſe ſtars which can-
e ſeen without the aſſiſtance of a teleſcope,
lled teleſcopic ſtars.
e heavenly bodies now under conſideration
lled fixed ſtars, becauſe they always main-
the ſame poſition or relative diſtance from
other; their apparent diurnal motion being
d ſolely by the earth's turning on its axis.
are eaſily diſtinguiſhable from the planets †
inferiority of brilliancy and light, and by
niform exhibition of the appearance termed
illation, or twinkling. They are ſuppoſed to

---

e Univerſity of Jena, in Upper Saxony, made a new
of conſtellations; converting the firmament into a
r *heraldicum*, and introducing the arms of all the
s of Europe, by way of conſtellations. But the more
d among the aſtronomers never approved of innova-
as ſerving no purpoſe but to introduce confuſion into
omy.

John Bayer, of Augſburgh, about the year 1603, intro-
the cuſtom of marking the ſtars in each conſtellation,
e letters of the Greek and Roman Alphabets. This he
wed from the Jews; who, to avoid the figures of
als, forbidden by their law, had uſed the letters of their
abet.
he firſt letter of the Greek alphabet is generally affixed to
brighteſt ſtar in each conſtellation; the ſecond letter to the
t, and ſo on. If there are more ſtars in the conſtellation
n letters in the Greek alphabet, the remainder are marked
h the letters of the Roman alphabet, or in Italics.
The firſt perſon who numbered the ſtars and reduced them
order was Hipparchus. See page 23.

† See Planets, Index.

be ſo many ſuns, equal in dimenſions t
and each ſtar is held to be the centre o
and to have planets, or earths, revolvin
in the ſame manner as our ſun; or, in ot
that many opaque bodies are illuminated
and cheriſhed by its light.

One ſun by day, by night *ten thouſand* ſ
And light us deep into the DEITY.
O how loud
They call devotion, genuine growth of
Devotion, daughter of aſtronomy!
An undevout aſtronomer is mad.

The above mentioned worlds or pla
rationally conjectured, are inhabited b
of intelligent beings, capable of con
with wonder the ſymmetry and beau
creation, and of gratefully acknowle
wiſdom, power, and goodneſs of their
CREATOR.

Stars
Numerous, and every ſtar perhaps a wo
Of deſtin'd habitation.

How immenſe then does the univerſe a
how great, wiſe, and good, the Divine
and Governor, " who fills, ſuſtains, an
the whole!"

Theſe are Thy glorious works, Parent of
Almighty! Thine this univerſal frame,
Thus wond'rous fair; Thyſelf how wond'r
Unſpeakable! who ſit'ſt above the heavens,
To us inviſible, or dimly ſeen

ıeſe Thy loweſt works; yet theſe declare
goodneſs beyond thought, and pow'r divine *.
MILTON.

: diviſion of the heavens into conſtellations
y ancient, and, probably, as old as aſtro-
itſelf; at leaſt, it was known to the moſt
t authors extant—witneſs that ſublime ex-
ıtion in Job—*Canſt thou reſtrain the ſweet
ce of the Pleiades, or looſen the bands of
?*—which is thus beautifully paraphraſed
ıe late ingenious author of the "Night
ghts:"——

anſt thou the ſky's benevolence reſtrain,
.nd cauſe the Pleiades † to ſhine in vain?

Or,

---

ee Revelations xv. 3.—Pſalm xix.—and the Spectator,
5.

The Pleiades are uſually deſcribed as an aſſemblage of
: ſtars in the neck of the conſtellation Taurus. They
us called, from a Greek word, ſignifying *to ſail*; as
errible to mariners, on account of the rains and ſtorms
requently riſe with them. Others, however, aſſert,
ıis conſtellation ſhews the time moſt favourable to navi-
which is the ſpring. And the Latins call them *ver-*
from *ver*, *ſpring*; becauſe of their riſing about the
equinox. The largeſt is of the third magnitude, and
led *Lucida Pleiadum*. There are now only ſix ſtars
in the Pleiades, and this appears to have been the caſe
g ago as the time of Ovid:

Quæ ſeptem dici, ſex tamen eſſe ſolent.

It may however be neceſſary to inform our young readers, that the
, though a popular, is in fact an erroneous ſtatement; ſince Hooke,
Micrographia, ſays, that with a teleſcope of 12 feet, he diſcovered
s among the Pleiades, and with a more perfect inſtrument, many
: the late improvements of Dr. Herſchell have, moreover, ſhewn
ımber of ſtars to be exceedingly beyond even what the diſcoveries
rmer aſtronomers could induce us to ſuppoſe.

Or, when Orion ſparkles from his ſphere
Thaw the cold ſeaſon, and unbind the yea
Bid Mazzaroth * his deſtin'd ſtation know,
And teach the bright Arcturus † where to
Mine is the night, with all her ſtars; I po
Myriads, and myriads I reſerve in ſtore.

"The Greeks fabled, that the name Pleiades v to theſe ſtars from the ſeven daughters of Atlas and Pl of the daughters of Oceanus; who, having been t of Bacchus, were for their ſervices taken up to hea placed there as ſtars, where they ſtill ſhine. The m which fable may be, that Atlas firſt obſerved theſe ſ called them by the names of the daughters of his wife l

Dr. Hutton's Philoſoph. and Mathemat. Di

"The moſt ancient authors (ſays La Lande) Homer, Attalus, and Geminus, counted only ſix l Simonides, Varro, Pliny, Aratus, Hipparchus, and In the Greek text, reckon them ſeven in number; ar aſſerted, that the ſeventh had appeared before the b Troy: but this difference might ariſe from the dif diſtinguiſhing them, and of counting them with th eye."

Aſtronomie par La Lalande, 1792, 4to. tom. i.

* Biblical critics are not agreed whether Mazz the Chaldee name for the Zodiac, the twelve ſign Zodiac, the chambers of the South, *i. e.* the ſtar Southern hemiſphere; or the Mazzerim, ſtars ſcatter the North pole. Some of the early commentators that it ſignifies the Dog Star.—See Job ix. 9.—xxxv xxxviii. 32.

† Arcturus is a fixed ſtar of the firſt magnitude, conſtellation of Arctophylax, or Boötes. The name is of two Greek words, denoting *bear* and *tail*—q. d. *bea* as being very near it. This ſtar was well known to cients, being mentioned by Virgil, Horace, and othe alſo Job ix. 9.—xxxviii. 32.

The riſing and ſetting of Arcturus was generally ſup portend great tempeſts. See Horace's firſt ode of the thir

And the ſame may be obſerved of the oldeſt among the heathen writers, Homer and Heſiod:

The Pleids, Hyads *, with the Northern Team,
And Great Orion's more refulgent beam;

Nec ſævus Arcturi cadentis
Impetus, aut orientis Hædi.

The whole verſe is thus tranſlated by Francis:

Who Nature's frugal dictates hears,
He nor the raging ocean fears,
Nor ſtars of power malign,
Whether in gloomy ſtorms they riſe,
Or ſwift deſcending through the ſkies
With angry luſtre ſhine.

Dr. Watts ſeems to have had Horace in view in his verſification of the 6th verſe of the 121ſt Pſalm: *The ſun ſhall not ſmite thee by day, nor the moon by night:*

No ſun ſhall ſmite thy head by day,
Nor the pale moon with ſickly ray
Shall blaſt thy couch: no baleful ſtar
Dart his malignant fire ſo far.

Arcturus riſes acronically in the latitude of London about the vernal equinox; and coſmically nearly at the time of the autumnal equinox. Virgil recommends the huſbandman, if the ſoil be barren, only to ſear

The ſurface, and but lightly print the ſhare,
When cold Arcturus riſes with the ſun. DRYDEN.

* The Hyades are five, or ſome ſay, ſeven ſtars in the Bull's head; famous among the poets for the bringing of rain. The principal of them is in the Bull's left eye; by the Arabs called Aldebaran Mythologiſts and poets feign them, like the *Pleiades*, to have been the daughters of Atlas and Pleione. Their brother Hyas, from whom they derive their name, being torn in pieces by a lioneſs, or, according to others, by a wild boar, they wept his death with ſuch vehemence, that the gods, in compaſſion to them, tranſlated them into heaven, and placed them in the Bull's forehead; where, it is ſaid, they continue to weep—this conſtellation being ſuppoſed to preſage rain. Some, however, repreſent the Hyades as Bacchus's nurſes; and the ſame with Dodonides, who, fearing the reſentment of Juno, and flying from the cruelty of king Lycurgus, were tranſlated by Jupiter into heaven.

three regions, called the Northern ar
hemiſpheres, and the Zodiac. The la
diviſions contains twelve conſtellati
we have already noticed +, reſerving
an account of their characters for this
work, in connexion with a ſhort
which we ſhall here give of them, as
ſome of the other conſtellations. And
perhaps be wholly uſeleſs, previouſly
our young readers, that a knowled
ſigns, and their correſponding months,
neceſſary in working ſeveral proble
globes, but alſo to underſtand many po
poſitions, in which the different ſeaſo
quently depicted by mentioning the
in them. Among innumerable paſſages
be quoted, the following will ſuffice,
from a book in very general eſtimation

At laſt from Aries rolls the bounteous ſu
And the bright Bull receives him.

e bright Virgin gives the beauteous days,
a weighs in equal ſcales the year.

AUTUMN.

n the cheerleſs empire of the ſky
corn the Centaur-archer yields,
e Aquarius ſtains the inverted year.

WINTER.

g obſerves, that ♈ repreſents the horns
; ♉ the head and horns of the bull;
re of gemini, the twins joining hands
the character cancer ♋ repreſents the
the ſun's declination from North to
two lines or figures drawn ſo as to point
ary ways; ♌ is the tail of the lion;
iginally the three ears of corn which
l; ♎ is the beam of the balance; ♏ was
picture of the ſcorpion; ♐ the arrow
her; ♑ repreſents capricorn the goat
a natural repreſentation of the water's
ſurface; ♓ is the picture of two fiſhes
ier back to back.

ıres of the 12 ſigns are ſuppoſed by Dr.
and other aſtronomers, to be Egyptian
ics, by which they deſigned to exhibit
kable natural occurrence in each month,
paſſed through theſe ſigns. Thus the
months, beginning from the vernal equi-
remarkable for the production of thoſe
hich they moſt valued, namely, ſheep,
goats. The lambs came firſt, which
nted by their parent, the RAM; next
, repreſented by the BULL; and the
h commonly come in pairs, and which,
gave the *name* to GEMINI, the third

conſtellation; which was not at firſt repre
by *Two Boys*, but by *Two Beaſts*; as referri
the fruitfulneſs of goats, in producing *twi*
about the time when the ſun was in that con
tion. When, in the fourth month, the
arrived at the ſummer ſolſtice, he diſcon
his progreſs toward the North pole, and l
to go back again to the Southward; th
trograde motion the Egyptians expreſſed b
CRAB, which is ſaid to go backwards.
exceſſive heat that uſually follows in the
month, is ſignified by the LION; an anim
markable for his ſtrength and fierceneſs;
others obſerve, when that animal, driven by
from the deſart, made his appearance on the
of the Nile. Nothing could be more prope
the ſymbol for the harveſt: namely, the VI
reaper or gleaner with an ear of corn in her
The ſeventh conſtellation, when the ſun arri
the autumnal equinox, is expreſſed by the
LANCE, or SCALES, *in equilibrio*, becau
days and nights, being then of the ſame l
ſeemed to obſerve an equilibrium like that i
ment. October is often a ſickly ſeaſon, whe
ſurfeits acquired in the hot months of the ſu
produce their fatal effects; the ſymbol is the
the SCORPION, who wounds with a ſting
tail, as he recedes; or, according to others,
certain regular winds brought forth a burnir
pour like the poiſon of the ſcorpion. The
ſion of hunting, which is chiefly followed
the fall of the leaf, is deſignated by the SA
TARIUS, or archer. The GOAT, which
animal that delights to browſe up hill and to
the higheſt rocks, is the emblem of the v
ſolſtice, when the ſun begins to aſcend fro

So

tropic, and is continually mounting higher er for the enſuing half year. AQUARIUS, ater-bearer, fitly repreſents the rains, or ꞁf the winter. And the two FISHES in had, it is imagined, reference to the ſhing ſeaſon, which began in February. is rationally ſuppoſed, that moſt of the bodies, taken in groupes or individually, their appellations according to their con- ꞁith rural and terreſtrial operations, and ꞁgies which they were found to bear to the ꞁf the field and the objects of their climate *. The Ethiopians, it is conjectured, firſt who invented the ſcience of the ſtars, names to the planets, not, as Lucan ob- ꞁt random and without meaning, but de- of the qualities which they conceived poſſeſs; and it was from them that this art ill in an imperfect ſtate, to the Egyptians; n, however, others ſolely attribute the n of this ſyſtem.

igin is thus accounted for by an ingenious r: When men began to unite in ſociety, nd it neceſſary to enlarge the means of their ꞁe, and conſequently to apply themſelves ꞁulture; and the practice of agriculture the obſervation and knowledge of the . It was neceſſary to the periodical return me operations of nature; to the ſame pheno- the ſkies; it was neceſſary to regulate the and ſucceſſion of the ſeaſons, months, and n order to this, it was requiſite to become

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* ancients, ſays Maimonides, directing all their at- agriculture, gave names to the ſtars derived from pation during the year.

acquainted with the march of the ſun, v its zodaical revolution ſhewed itſelf the ſupreme agent of all the creation; then moon, which by its changes and returns re and diſtributed time; finally of the ſtar even of the planets, which, by their appe and diſappearance on the horizon and the noc hemiſphere, formed the minuteſt diviſions. word, it was neceſſary to eſtabliſh an entire ſy of aſtronomy, and to form an almanac.

——— ——— Heaven
Is as the book of God before thee ſet,
Wherein to read his wondrous works, and lea
His ſeaſons, hours, or days, or months, or yea
MILTO

From the inſtant this agricultural race of men ha turned an eye of obſervation on the ſtars, the found it neceſſary to diſtinguiſh individuals o groupes, and to aſſign to each a proper name. A con ſiderable difficulty here preſented itſelf; for on th one hand, the celeſtial bodies, ſimilar in form, offered no peculiar character by which to denominat them; and on the other hand, language, poor and in a ſtate of infancy, had no expreſſions for ſo many new and metaphyſical ideas; but the uſual ſtimulus of genius, neceſſity, conquered all obſtacles. Having remarked, that the annual appearances of the productions of the earth were conſtantly connected with the riſing and ſetting of certain ſtars, and with their poſition relatively to the ſun,—the mind, by a natural mechaniſm, aſſociated in its thought terreſtrial and celeſtial objects, which had in fact a certain alliance; and, applying to them the ſame ſign, it gave to the ſtars and the groupes that it formed

of

em, the very names of the terreſtrial objects
ich they bore affinity.

ne of the poetical fictions of the ZODAICAL
s are as follow:

IES is the ram with the golden fleece which
r prepared to carry Phryxus and Helle in
r from Iolchos in Theſſaly, or rather from
ountain Laphyſtium in Bœotia, where their
Athamus was going to immolate them, at
ſtigation of their ſtep-mother Ino, towards
is, now Mingrelia, part of Georgia, adja-
o the Eaſtern extremity of the Euxine or
Sea. Helle, in this aërial paſſage, became
, and fell from her ſeat into that part of the
which, from her death by this accidental im-
on into it, received the name of Helleſpont.
a narrow ſtreight between the Archipelago
he ſea of Marmora, and is now called the
nelles. The Helleſpont is famous for the
and death of Hero and Leander *; and for
ridge of boats which the Thraſonic Xerxes
over it when he invaded Greece †.

ryxus, after he had given his ſiſter a burial
ne neighbouring coaſt, purſued his journey,
arrived ſafe at Colchis; where he ſacrificed
am to Jupiter, and ſuſpended its fleece upon
e in the foreſt conſecrated to Mars, the god
ar.—This is the famous golden fleece which
obtained by Jaſon and the Argonauts ‡. Some
oſe, that when Phryxus and Helle fled from the

"Of Seſtos ſhe, fair Hero was her name;
"The youth, Leander, from Abydos came."
See LEMPRIERE's DICTIONARY.

See Arithmetical Queſtions—Battle of Thermopylæ.

See Argo Navis, Index.

rage of their ſtep-mother Ino, t
a ſhip whoſe enſign was a *gold*
to Colchis; and that this was t
poetical fable, that *a ram with a g*
with them, or carried them awa
lated, to Colchis. Many auth
voured to ſhow, that this fable i
repreſentation of ſome real hiſtor
haps, beſt explained, by ſuppoſing
the profit of the wool-trade to C
gold which they commonly gath
fleeces in the river.

TAURUS is the bull into which
ſupreme god of the heathens, m
himſelf when he became enamo
beautiful Europa, daughter of Agen
Phœnicia. In this aſſumed ſhape, th
veyed the princeſs acroſs the ſea into
of the globe, which from her name
to have been called Europe. As it wa
of the ancients to have images on
both at the head and ſtern (the fir
was called the ſign, from which th
named, and the other was that of
deity to whoſe care the ſhip was con
is by ſome conjectured, that this
might give occaſion to the fable, that
carried away by Jupiter in the ſhape of

There is on ſome celeſtial globes
tion called Taurus Poniatowſki, "
Poniatowſki." It is placed between
and Aquila *.

---

* Count Poniatowſki was a Poliſh office
merit, who ſaved the life of Charles XII.
the battle of Pultowa, and afterwards preven

NI are the twins, Caſtor and Pollux, the ate ſons of Jupiter, by Leda *, the wife arus, king of Laconia †; a country of ıeſus, now the Morea in European Turkey. watered by the river Eurotas, in which s bathing when Jupiter deceived her in the a ſwan.

· and Pollux embarked with Jaſon to go of the golden fleece, and both behaved perior courage. Pollux was deemed the l patron of boxing and wreſtling; and iſtinguiſhed himſelf in the management of

> r Leda's twins in time to ſtars decreed,
> e fought on foot, one curb'd the fiery ſteed.
>
> DRYDEN.

e Caſtor is often drawn with a whip in his ›ut Dr. Lightfoot ſays, that the figure which :d for Caſtor and Pollux was that of two men on horſeback, with each of them a in his hand.

ing the Argonautic expedition, in a violent a flame of fire was ſeen to play around the f each of them, and immediately the tem- aſed: from this occurrence their power to

---

ı from being taken priſoner, or killed, in the iſle of in the Baltic Sea, near Stralſund, Pomerania, Ger- See VOLTAIRE's Hiſt. of Charles XII.

> :aſtor and Pollux fair Leda's pride.
>
> CLAUDIAN.

The brevity with which the Laconians always ex- themſelves, is now become proverbial; and by the Laconic, we underſtand whatever is conciſe, and not with unneceſſary words.

protect ſailors has been credited ; an
which are very common in ſtorms, l
called Caſtor and Pollux. Theſe b
the Helleſpont, and the adjacent ſea
on which account they have always
the friends of navigation The appe
conſtellations together was, accord
ancient writers, thought favourable
and therefore, for a good omen, tl
carved or painted on the head of the
it a name from thence : the Alexand
which St. Paul ſailed from Melita,
Syracuſe in Sicily, had for its ſign (and
its name *) Caſtor and Pollux †.
each other ſo tenderly, that they
aſunder ; and Jupiter having beſtowe
on Pollux, he divided it with his br
inſomuch that they lived and died al

> By turns they viſit this etherial ſky
> And live alternate and alternate di
> Ho

> Pollux offering his alternate life
> Could free his brother, and could
> By turns aloft, by turns deſcend b
> Dryde

On this account they are aptly
Cowley,

> The Ledean ſtars ſo fam'd for lo

This act of fraternal love occaſioned
metamorphoſed into ſtars, and made a

---

* See Taurus, page 122.

† See Acts xviii. 11.

s the ſea-crab which Juno * ſent to
by the foot, while he fought the
in the lake of Lerna, which was
Argos in the Peloponneſus. This
as ſoon diſpatched; and Juno, unable
n her attempts to leſſen the fame
placed the crab among the conſtel-

celebrated Nemæan † lion which was
againſt Hercules; being ſlain by this
ddeſs placed the animal among the

n the Linnæan ſyſtem of zoology,
quadrupeds belonging to the felis,
He is an inhabitant of all parts
nd the hot parts of Aſia; but lions
in the torrid zone, where their ſize

---

a celebrated deity among the ancients. By
th Jupiter ſhe became queen of all the gods,
heaven and earth She is commonly repre-
ng robe, with an air of majeſty, wearing a
with roſes and lilies, holding a ſceptre in her
g in a chariot drawn by peacocks, attended
iſtinguiſhing character of Juno is that of a
erious wife. She was worſhipped chiefly in
nos and at Carthage:

e name, beloved by Juno more
wn Argos on the Samian ſhore.
DRYDEN's VIRGIL.

as a town of Argolis, a country of Pelopon-
abitants were kept under continual alarms by
l it was deſtroyed by Hercules. The con-
imſelf in the ſkin: and games were inſtituted
te ſo great an event. The Nemæan games
e four great and ſolemn ſports which were ob-
reeks. At the celebration of thoſe games, all
aſtical and equeſtrian exerciſes and conteſts

is the largeſt, and their rage, like that
ferocious animals, the moſt tremendous,
flamed by the influence of a burning
very arid ſoil.

The parent ſun himſelf
Seems o'er this world of ſlaves to tyrann
————The very brute creation there
This rage partakes, and burns with horrid
Theſe ruſhing from th' inhoſpitable woods
Of Mauritania, or the tufted iſles
That verdant riſe amid the Lybian wild,
Innumerous glare around their ſhaggy king,
Majeſtic, ſtalking o'er the printed ſand,
And with imperious and repeated roars
Demand their fated food. The fearful flo
Crowd near their guardian ſwain; the nobl
Where round their lordly bull, in rural ea
They ruminating lie, with horror hear
The common rage. Th' awakened village
And to her fluttering breaſt the mother ſtra
Her thoughtleſs infant. From the pirate's
Or ſtern Morocco's tyrant-fang eſcap'd,
The wretch half wiſhes for his bonds again
While, uproar all, the wilderneſs reſound
From Atlas Eaſtward to the frighted Nile.

TH

It is obſerved, that though the lion rei
ſolute maſter over every beaſt, his rage din
and his timidity increaſes, as he approa
habitation of the human race. Lions h
been known to ſpare the weaker anima
many inſtances are related by ancient wr
their gratitude.—See particularly the
Androcles and the Lion, in the 139th nu
the Guardian.

Lions are capable of being tamed; and
monarchs are ſaid, on days of audience,

wo large lions chained on each ſide of the
e to the room of ſtate, led there by keepers
ins of gold.

Lady Craven's tour, mention is made of a
n Turkey, that followed a man, like a dog.

e lion preys on all kinds of animals; and
ength is ſo great, that he can carry off a
ing-ſized ox with the utmoſt eaſe. He ſome-
ſeizes his prey by ſurpriſe; but man falls a
to his hunger more through neceſſity, as it
, than choice. His prey, if we may credit
reat bard, muſt be a living ſubject:

'Tis
he royal diſpoſition of that beaſt
o prey on nothing that doth ſeem as dead.

SHAKESPEARE.

e Arabs have a notion of his ſparing the
r ſex; but Dr. Shaw informs us, in his
ls, that the lion in theſe days obſerves no
ctions. The fleſh, according to Mr. Pen-
is often eaten in Barbary, and is ſaid to
ble veal in taſte.

RGO is the Virgin Aſtrea, the goddeſs of
e. She lived upon the earth, as the poets
ion, during the golden age; but the wicked-
nd impiety of mankind drove her to heaven
e brazen and iron ages, and ſhe was placed
g the conſtellations of the Zodiac under the
of Virgo. She is repreſented as a virgin,
a ſtern but majeſtic countenance, holding a
of ſcales in one hand, and a ſword in the
. Some, however, maintain that Erigone
hanged into the conſtellation Virgo. The
of her father Icarius, an Athenian, who
periſhed

periſhed by the hands of ſome peaſants,
he had intoxicated with wine, cauſed
deſpair, in which Erigone hanged herſel
ſhe was afterwards, as it is ſaid, placed
the ſigns.

Libra is the ſcales of Aſtræa, with whi
goddeſs is always painted; hence this conſt
is called by Virgil "Aſtræa's balance:"

But when Aſtræa's balance, hung on high,
Betwixt the nights and days divides the ſky,
Then yoke your oxen, ſow your winter grain
Till cold December comes with driving rain.
Dr

The Eternal
Hung forth in heav'n his golden ſcales, yet ſ
Betwixt Aſtrea and the Scorpion ſign.
M

Scorpio is the ſcorpion which ſtung
the boaſting hunter Orion. According to
this ſerpent was produced by the earth, to
Orion's vanity for having boaſted that the
not on the terraqueous globe any animal w
could not conquer. Some aſſert, that Oric
lenged Diana, who ſhould kill moſt wild
whereupon ſhe raiſed up a ſcorpion, which
killed him.

Sagittarius is Chiron, one of the cen
the ſon of Philyra and Saturn, who had
himſelf into a horſe, to elude the jealous
ries of his wife Rhea.

Chiron was famous for his knowledge
ſic, medicine, and ſhooting. He taught

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* See Centaurus, Index.

ſe of plants and medicinal herbs; and
ted in all the polite arts the greateſt he-
f his age. He taught Æſculapius * phyſic;

Eſculapius, the ſon of Apollo, was the god of medi-
nd was phyſician to the Argonauts; he is ſaid to
tored many to life; and after his death he received
ionours. Æſculapius was worſhipped at Epidaurus, a
Peloponneſus, and hence he is ſtyled by Milton "the
Epidaurus." Being ſent for to Rome in the time of
:, he aſſumed the form of a ſerpent and accompanied
baſſadors, as the ſtory is related by Ovid in his Meta-
ſis: but though he was thus changed in appearance, he
Æſculapius, *in ſerpente deus, the deity in a ſerpent*,
ler that form continued to be worſhipped at Rome.
:k and the ſerpent were ſacred to him; eſpecially the
is the ancient phyſicians uſed them in their preſcriptions.
of the laſt acts of Socrates, who is accounted the wiſeſt
ſt man of Pagan antiquity, was, to offer a cock to
pius. He and Plato, another moſt eminent philoſopher,
oth idolaters; they conformed and adviſed others to
1 to the religion of their country; to groſs idolatry and
ſuperſtition. If the wiſeſt and moſt learned were ſo
what muſt the fooliſh and the ignorant be †?
ns, diſtinguiſhed by the ancients as "one of the eyes
:ce, the learned city, and the ſchool of the world,"
nd by the Apoſtle Paul "wholly given to idolatry‡:"
hich Dr. Doddridge makes the following judicious
tion: "The prevalence of a variety of *ſenſeleſs ſuper-*
in this moſt learned and polite city, which all its
ours beheld with ſo much veneration, gives us a moſt
nd affecting idea of *the need* we have, in the moſt
ed ſtate of human reaſon, of being taught by a DIVINE
LATION.

Fam. Expoſitor, v. iii. p. 278. 4th edition.

e "An Eſſay on the Divine Authority of the New Teſtament, by
ogue;" a maſterly aud candid performance, which I moſt earneſtly
end to the attentive peruſal of my young readers. So congenial
own feelings is the language of an eminent writer on a ſimilar
, that I will venture to adopt it on this: "Few books have been
d by me with greater pleaſure; and whoever has the care of
ding others," in the principles of religion, "may be charged with
ence in his duty if this book is not recommended."
ts xvii. 16.

he was tranſlated to heaven by t
placed among the conſtellations of
under the name of Sagittarius. Sor
aſſert, that Crocus, a famous hun
youth mentioned by Ovid, who, fo
the nymph Smilax, was changed i
was, at the requeſt of the Muſes, m
into this ſign.

Capricornus is Pan, or Bacchı
ing from the giant Typhæus into th
transformed himſelf into a ſea-goat,
account Jupiter made him a conſtell
ſay, that this ſign was the goat A
nurſe of Jupiter.

"The bounteous Pan," as he
Milton, was the god of ſhepherds a

---

* Apollo was the god of all the fine ar
muſic, poetry, and eloquence. His oracles
repute. He had a famous Coloſſus in Rhode
of the wonders of the world; but his moſt fa
at Delphi, near Mount Parnaſſus, in Ph

ıd thou the ſhepherd's tutelary god,
ave, for a while, O Pan! thy lov'd abode.

DRYDEN'S VIRGIL.

harveſt home, and on the ſhearing-day,
hen we ſhould thanks to Pan and Pales * pay.

DRYDEN.

e reſided in Arcadia, an inland country of
ponneſus, where the woods and the moſt
ged mountains were his habitation. As Pan
lly terrified the inhabitants of the adjacent
ntry, that kind of fear which often ſeizes men,
which is only ideal and imaginary, has received
n him the name of *Panic fear*. This kind of
or has been exemplified, not only in indivi-
ls, but in numerous armies—ſuch as that of
nnus, which was thrown into the greateſt con-
nation at Rome, without any cauſe or plauſible
ſon.

When Theron, king of Spain, attempted to pil-
e the temple of Hercules at Cadiz, a panic fear
perſed his troops, and drove his fleet from the
ſt.

At the battle of Guinegate in 1513, the cavalry
France, though they conſiſted chiefly of gentle-
n who had behaved with great gallantry in many
perate actions in Italy, were, on ſight of the
my, ſeized with ſo unaccountable a panic, that
y immediately took to flight, and were purſued
the Engliſh, who generally call this action, or
her rout, the *Battle of Spurs*, becauſe the

---

* Pales was the goddeſs of ſheepfolds and of paſtures
ong the Romans.

Now ſacred Pales, in a lofty ſtrain
I ſing the rural honours of thy reign.

DRYDEN'S VIRGIL.

French, that day, made more uſe o
than of their ſwords or military weap

"And ſpurring from the fight confeſs'd

Bacchus was the god of wine, and

> Come, thou monarch of the vine,
> Plumpy Bacchus, with pink eyne *,
> In thy vats our cares be drown'd.
>
> SHA

He taught men the uſe of the vine, the
of the earth, and the manner of makin

Typhæus, or Typhon, was a fan
with a hundred heads, like thoſe of
Flames of devouring fire were darte
mouth and eyes; and he uttered horrid
the diſſonant ſhrieks of different ar
made war againſt heaven, and ſo a
gods that they fled away, and aſſum
ſhapes; Jupiter became a ram, Mercu
Apollo a crow, Diana a cat, Juno a co
a goat, Venus a fiſh, &c. &c.

> When the bold Typhæus
> Forc'd great Jove from his own heaven
> The leſſer gods, that ſhar'd his proſpe
> All ſuffer'd in the exil'd thunderer's fa

But at length Jupiter reſumed cour
Typhæus dead with his thunderbolts,
him under Mount Ætna, in Sicily; or
to ſome, under the iſland Inarime, near
a country of Italy, of which Capu
capital.

---

* The plural of eye, from the Scotch een
obſolete.

us roars beneath, by Jove's command,
ſh'd at the flaw that ſhakes the land,
hifts his weary ſide, and, ſcarce awake,
wonder feels the weight preſs lighter on his back.

DRYDEN's VIRGIL.

ARIUS. It is generally imagined, that de was changed into this conſtellation. a beautiful youth of Phrygia, whom in the form of an eagle, carried up into as he was tending his father's flocks on da ; and he became the cup-bearer of the ſtead of Hebe, the goddeſs of youth ; been diſmiſſed from this office by Jupiter, ſhe fell down a little diſorderly as ſhe ring nectar at a grand feſtival.

es are ſaid to be the fiſhes into which nd her ſon Cupid transformed themſelves, l the fury of Typhæus when he aſſailed

was one of the moſt celebrated deities of nts. She was the goddeſs of beauty : the of love ; the queen of laughter ; and the of the graces and pleaſures. Mythologiſts more than one Venus ; but that which is wn is ſaid to have ariſen out of the ſea, iſland of Cytherea, adjacent to the Morea. deſs has a great variety of names ; one h is Anadyomene, rendered immortal by a d painting of Apelles *, ſo called ; which repreſents

---

LLES was one of the moſt celebrated painters of and flouriſhed in the time of Alexander the Great, n he was in high favour. His pencil was ſo famous g fine lines, that Protogenes diſcovered by a ſingle

repreſents her as iſſuing from the boſom o
waves, and wringing her beautiful treſſes o
ſho

line that Apelles had been at his houſe. Protogenes w
eminent painter at Rhodes: Apelles ſailed thither, and
to his houſe with great eagerneſs, to ſee the works of a
who was known to him only by name. Protogenes wa
from home; but a female ſervant was left watching a
piece of canvaſs, which was fitted in a frame for painting
told Apelles that Protogenes was gone out, and aſked hi
name, that ſhe might inform her maſter who had inquir
him. "Tell him (ſays Apelles) he was inquired for b
"perſon;"—at the ſame time taking up a pencil, he
on the canvaſs a line of great delicacy. The abſent art
his return being made acquainted with what had hap
and contemplating the beauty of the performance, imme
pronounced that Apelles had been there, obſerving t
finiſhed a work could be produced by no other perſon.
anecdote gave riſe to the following lines by one of ou
poets.

And Sir, at preſent, would you pleaſe
To leave your name?—Fair maiden, yes—
Reach me that board;—no ſooner ſpoke,
But done—with one judicious ſtroke,
On this plain ground Apelles drew
A circle, regularly true.——
And will you pleaſe, ſweetheart, ſaid he,
To ſhew your maſter this, from me?
By it he preſently will know
How painters write their name at Co.

"'Tis thus that painters write their name at Co."
expreſſion which is ſometimes uſed to denote great excel
Co, Cos, or Coos, the birth-place of Apelles, is an
in the Southern part of the Archipelago, ſomewhat
of Rhodes.

It is recorded of this inimitable artiſt, that he was ſo
tive to his profeſſion, that he never ſpent a day witho
ploying his pencil, whence the proverb of Nulla dies ſine
Let no day paſs without one ſtroke of the pencil. An adm
maxim which ſhould be indelibly impreſſed on the min
exemplified in the practice of all who wiſh to attain exce
in any art or profeſſion.

r. This unrivalled performance was pur-
y Auguſtus; and placed, by that monarch,
emple of Julius Cæſar. It is often ſtyled
us riſing out of the ſea," and was eſteemed
ſt exquiſite figure which the pencil could
it is therefore highly extolled by the an-
ets. Ovid has paid it the following elegant
nent:

If fam'd **APELLES** had not painted thee,
VENUS, thou ne'er had'ſt riſen from the ſea."

e poet of Sidon, Antipater, who flouriſhed
30 years B. C. has left us the ſubſequent
epigram on it:

---

works of Apelles were all admired; but the moſt
d were, the picture of Alexander in the temple of
Epheſus, and that of Venus emerging from the ſea,
oticed, which was eſteemed his *chef d'œuvre*.

—" Venus riſing from the ocean's wave
he chief work of the great Coan artiſt." OVID.

rtial was Alexander the Great to Apelles, that he
forbade any other to paint his likeneſs.

ne but Apelles' hand ſhall paint my face,
ne but Lyſippus make me breathe in braſs:
ſpake his edict.

HORACE.

pus was a celebrated Greek ſtatuary, and chiefly excel-
ne hair of the heads, and the proportion of his figures.
a native of Sicyon, capital of Sicyonia, near the
Corinth. See Grecia Antiqua, Wilkinſon's Atlas

moſt famous ſculptor of antiquity was Phidias, an
n, and contemporary with the celebrated Pericles.
ue of Jupiter Olympus at Elis, in the Peloponneſus,
med one of the wonders of the world. He died about
rs B. C.

Venus is repreſented by
the moſt engaging form and dreſs, u
attended by her ſon Cupid, or rath
there were ſeveral of them), wing
with quivers, accompanied by Joc
mirth, all flying round her. Sh
deſcribed as dancing with the three
Thalia, and *Euphroſyne*, joined w
ſometimes riding in a chariot d
but the pigeon was her favourite

Cupid was a celebrated deity
cients; god of love; and lov
fluence is ſaid to have extended
the ſea, and the earth:

In hell, and earth, and ſeas, and
Love conquers all, and we muſt
D

ORTHERN CONSTELLATIONS.

e Northern hemiſphere contains 36 conſtel-
ıs, including thoſe which have been added
er times; their names are as follow :

ſtellations.	Engliſh Names.
Major	The Greater Bear.
Minor	The Leſſer Bear.
o	The Dragon.
us	Cepheus.
meda	Andromeda.
peia	Caſſiopeia.
us	Perſeus.
us	Pegaſus.
Venatici	The Greyhounds.
s	Böotes.
Mænalus	Mænalus's Mountain.
Berenices	Berenice's Hair.
aroli	Charles's Heart.
a Borealis	The Northern Crown.
les	Hercules.
rus	Cerberus.
or Vultur Cadens	The Lyre.
us	The Swan.
cula	The Fox.
	The Gooſe.
ta Stellio	The Lizard.
lopardalus	The Camelopard.
ns	The Serpent.
ntarius	The Serpent-Bearer.
m Sobieſki	Sobieſki's Shield.
la, or Vultur Volans	The Eagle.
öus	Antinöus.
hinus	The Dolphin.

Equulus

Conſtellations.	Engliſh Names.
Equulus.	The Little Horſe.
Sagitta	The Arrow.
Auriga	The Charioteer.
Lynx	Lynx.
Leo Minor	The Leſſer Lion.
Triangulum.	The Triangle.
Triangulum Minus	The Little Triang
Muſca	The Fly.

The poetical ſtories concerning ſome above conſtellations are theſe :—

URSA MAJOR and MINOR — the GR and LESSER BEARS are Diana's * nymph and her illegitimate ſon Arcas, by Jupiter being both changed into bears by the jeal

---

* Diana was the goddeſs of hunting, and the of modeſty and chaſtity. The moſt famous of h was that of Epheſus, near Smyrna in Aſia, whic of the ſeven wonders of the world †. She is uſually r by artiſts as a tall beautiful virgin, having ſomethi line in her appearance, dreſſed in buſkins, with a her ſhoulder, her clothes girt, chaſing deer or othe and attended by a number of virgins like herſelf.

Known by her quiver and her lofty mien,
She walks majeſtic, and ſhe looks a queen.

DRYDEN'S

Diana, on account of having been born in Del the Cyclades in the Archipelago) is ſometimes call Luna and Diana are ſometimes conſidered as goddeſs.

Haſte the ſacrifice.
Sev'n bullocks yet unyok'd for Phœbus chooſe
And for Diana ſev'n unſpotted ewes.

DRYDEN'S

† See Arith. Queſt. and Acts xix. 27.

‡ See Apollo, page 130.

imperious Juno, they were tranſlated y Jupiter, leſt they ſhould be hurt by n.

vas a native of the city of Helice, in iſtrict near the bay of Corinth: hence Bear is ſometimes called Helice. The 1 the body and the three in the tail or are frequently denominated Charles's in is contracted from waggon, and rriage for heavy burdens:—

> t four by the day, I'll be hanged: *Charles's*
> r the new chimney, and yet our horſe not
>
> SHAKESP. HEN. IV. Pt. I.

> be the harveſt; 'tis the beggar's gain
> n the fallings of the loaded wain.
>
> DRYDEN.

s reputed to have formed the conſtellation Leſſer Bear, by which the Phœnicians * have ſailed:

> ing this, Phœnicians plow the main.
>
> ARATUS.

h moſt probably is, that Thales brought edge and uſe of it firſt from the Phœnielf into Greece; and ſo was, by the ccounted the original inventor of it.

> The Leſſer Bear
> from the pole the lucid band: the ſtars,
> from this conſtellation, faintly ſhine
> twelve in number; only one beams forth

---

* See Arith. Queſt.

> Conſpicuous in high ſplendor, nam'd b
> The CYNOSURE; by us the POLAR S

The bear (in Latin *urſus*, in Gre
and in Hebrew *dob*, the *growler*) is a w
quadruped of the cat kind; a rough ſava
and a beaſt of prey. It is a native of
and the northern parts of Europe :
Towards the pole it is large and white ;
places it is ſmaller, and of a dark duſ
They feed on fruits, fleſh, and honey.
they lie hid and aſleep, the male forty
the female four months; and ſo ſoundl
firſt fourteen days, that blows will n
them. In the ſleepy ſeaſon, they are ſai
no nouriſhment but from licking their fe

---

* This ſtar, before the invention of the marine
was of prime uſe in navigation. See Arith. Queſ
At what period men began to ſail by the ſtars, o
the firſt people that did ſo, is not clear; but the
uſually given to the Phœnicians. That it was prac
Greeks as early as the time of the Trojan war,
1200 years B. C. we learn from Homer; for
Ulyſſes, when ſailing on his raft, that

> Plac'd at the helm he ſate, and mark'd the ſ
> Nor clos'd in ſleep his ever-watchful eyes.

It is rational to ſuppoſe, that the ſtars were firſt uſe
to travellers by land; for we can ſcarcely imagine tha
venture themſelves upon the ſea by night, befor
learned ſome method of directing their courſe. A
according to Diodorus Siculus, that travellers in
plains of Arabia were accuſtomed to direct their
the Bears. That people travelled in theſe vaſt deſa
by obſerving the ſtars, is directly proved by this pa
Koran; "God has given you the ſtars to be gu
"dark both by land and ſea." It is probable tha
they employ the compaſs.

urally a hideous look, but when rrible *.

Thou'dſt ſhun a bear;
ıt lay tow'rd the raging ſea,
the bear i'th' mouth.

SHAKESPEARE.

ıowever, rough and ſtupid as he le of diſcipline; leaps, dances, and ınd tricks at command. Prince iſh nobleman, who ſometimes united ence of European taſte, the barba- Sarmatian † manners, once entered coach, drawn by ſix white bears own Lithuanian foreſts), harneſſed, for the purpoſe; but their ferocity ity rendered them dangerous to

ırmerly common in Paleſtine: David l often fought with bears and lions ‡. prophetically curſed ſome lads of

---

writers, to expreſs the tranſports of a man "He is chafed in his mind, as a bear vhelps," 2 Sam. xvii. 8.

ıs an extenſive country in the north of The inhabitants were a ſavage uncivilized nded with the Scythians, naturally warlike, nting their bodies to appear more terrible ttle. They paſſed among the Greeks and of Barbarians. Under the Roman empe- very powerful, and diſturbed the peace their frequent incurſions. They generally tains without any habitation, except their vas the European part of Sarmatia is the d Poland.

34, 36.

Bethel for inſulting him, two ſhe bears
of a neighbouring foreſt, and either
wounded forty-two of them *.

The fleſh of bears was much eſteemed
ancients; and even at this day, the paw
cording to others, the *ham)* of a bear
ſmoked, is ſerved up at the tables of
So great a rarity is bear's fleſh eſteemed
the Chineſe, that, as Du Halde informs
emperor will ſend fifty or a hundred leag
Tartary, to procure thoſe animals for
entertainment.

Bear's greaſe is eſteemed by ſome a
remedy againſt cold diſorders, eſpecially
tiſms; and its ſkin makes a fur in great
on which depends a conſiderable article
merce, being uſed in houſings, on coach
and made into gloves, muffs, and the like.

DRACO. This, like many of the other co
lations, is mentioned by the ancient poets.—

> Around our pole the ſpiry dragon glides,
> And like a wand'ring ſtream the *bears* divides
> The *leſs* and *greater*, who by fate's decree
> Abhor to dive beneath the Southern ſea †.
>
> DRYDEN'S VI

---

[*] 2 Kings ii. 23, 24. Bethel was ſituated near Jer

[†] The ſame circumſtance with reſpect to the Great
is noticed by Homer; ſee the quotation, page 116.—
however, common to other conſtellations in the arctic
namely, to Cepheus and Caſſiopeia, in the latitude in
Homer and Virgil produced their immortal work
theſe, in the latitude of London, may be added Camelop
Lynx, and Lacerta Stellio.

> All theſe the Briton through the night beholds,
> Exempt from ſetting all the circling year.
>
> EU

is ſaid to be the dragon which kept the
of the Heſperides, whoſe delicious fruit
:ded by a dreadful dragon, which never
was one of the twelve labours of Hercules
re ſome of the golden apples of the Heſpe-
Thoſe who attempt to explain mythology
that the Heſperides were certain perſons,
. an immenſe number of flocks; and that
›iguous Greek word which ſignifies *an*
nd *a ſheep*, gave riſe to the fable of the
ıpples of theſe gardens.

" Heſperian gardens famed of old," as
obſerves, were ſo called from *Heſperus*,
becauſe placed in the Weſt, under the
ſtar. Some ſuppoſe them to have been
near Mount Atlas, in Africa; others
n that they were the iſles about Cape Verd
ſame quarter of the globe), whoſe moſt
r point is ſtill called *Heſperium cornu*, the
the Heſperides; while others contend, that
lebrated gardens were the Canary iſlands.

;, ſaid to have been contemporary with
was king of Mauritania, in the North
Africa, and maſter of a thouſand flocks
·y kind. For refuſing hoſpitality to Per-
ıe was changed into the mountain that ſtill
ıis name; and which is ſo high, that the
:s have imagined the heavens reſted on its
t, and that Atlas ſupported the world on his
:rs; hence he is repreſented by artiſts, and
ks of mythology, as an old man bearing the
on his ſhoulders; and general deſcriptions of
hole globe in ſets of maps, are to this hour
Atlaſes: hence alſo, "Atlantean ſhoulders" is
ıphor uſed by Milton, to expreſs the vaſt capa-
f Beëlzebub, " majeſtic though in ruins."

This fable aroſe from the fondneſs which
ſhewed for aſtronomy; and his often frequ
elevated places and mountains, whence he
with more facility obſerve the heavenly bodi

> Iopas brought
> His golden lyre, and ſung what ancient ATLAS
> The various labours of the wand'ring moon,
> And whence proceed th' eclipſes of the ſun;
> What ſhakes the ſolid earth, what cauſe delays
> The ſummer nights, and ſhortens winter days.
>
> DRYDEN'S VI

CEPHEUS was a king of Ethiopia, in A
and father of Andromeda, by Caſſiopeia. Th
boaſting that ſhe was fairer than the Nerei
Neptune †, at the requeſt of thoſe deſpiſed ny

---

* The Nereides were nymphs of the ſea. They
implored as were the reſt of the deities; and had altars
on the coaſts of the ſea, where the piety of mankind
offerings of milk, oil, honey, and often of the fleſh of
When they were on the ſea ſhore they generally reſi
grottoes and caves, which were adorned with ſhell
ſhaded by the branches of vines. Their duty was to
upon the more powerful deities of the ſea, and to be
vient to the will of Neptune. As they had the po
ruffling or calming the waters, they were always addre
ſailors, who implored their protection that they might
them a favourable voyage and a proſperous return. Th
repreſented as young and handſome virgins, ſitting on do
and holding Neptune's trident in their hand, or ſom
garlands of flowers. They were, according to moſt my
gifts, fifty in number, and the daughters of Nereus, a ſea
ſon to Oceanus.

> Then Nereus ſtrikes the deep, the billows riſe,
> And, mix'd with ooze and ſand, pollute the ſkies.
>
> DRYDEN'S VIR

† Neptune was the god of the ſea; on which accou
was entitled to more power than any of the other gods.

puniſh her inſolence, ſent a huge ſea-monſter ravage the country; and the wrath of the god ld only be appeaſed by expoſing Andromeda,

ter. Not only the ocean, rivers, and fountains, were ected to him, but he could alſo cauſe earthquakes at his ſure, and raiſe iſlands from the bottom of the ſea with w of his trident:

Neptune, beſides the ſway
Of every ſalt flood, and each ebbing ſtream,
Took in by lot 'twixt high and nether Jove
Imperial rule of all the ſea-girt iſles,
That like to rich and various gems inlay
The unadorned boſom of the deep.

MILTON.

Neptune is generally repreſented ſitting in a chariot made of ell, and drawn by ſea-horſes [*] or dolphins, with a triton each ſide. Sometimes he is drawn by winged-horſes, with ident [†] in his right hand and a dolphin in his left, ſtand- up as his chariot flies over the ſurface of the ſea; his aſpect ways majeſtic and ſerene:

So when the father of the flood appears,
And o'er the ſeas his ſov'reign trident rears,
Their fury fails; he ſkims the liquid plains,
High on his chariot, and with looſen'd reins
Majeſtic moves along, and awful peace maintains.

DRYDEN'S VIRGIL.

Triton was a ſea deity by Neptune and Amphitrite [‡]. He s very powerful, and could calm the ſea and abate ſtorms at aſure. He is generally repreſented as blowing a ſhell, his dy above the waiſt is like that of a man, and below a lphin. Many of the ſea deities are called Tritons; but the me is generally applied to thoſe only who are half men and lf fiſhes.

---

[*] In their fore part they reſemble horſes, and in their hinder part hes.

[†] A three-forked ſceptre; from the Latin *tres*, three, and *dens*, tooth.

[‡] See Delphinus, Index.

whom Caſſiopeia tenderly loved, to th beaſt. Juſt as ſhe was going to b Perſeus delivered her from the impend

Minerva thus to Perſeus lent her ſhield,
Secure of conqueſt ſent him to the field:
The hero acted what the queen ordain'd;
So was his fame complete, and Andromede u

ANDROMEDA, it is ſaid, was, afte made a conſtellation in heaven by Minerv

According to Pliny, it was at Joppa i that Andromeda was tied on a rock to be to the ſea-monſter. And in St. Jerom's namely, about the year 400, were ſtill ſhe ported marks of the chain by which ſh faſtened. Joppa is frequently mentioned i Scriptures; ſee particularly Acts ix. 36, 38. It is now called Jaffa.

The fable of Andromeda has been explained ſuppoſing that ſhe was courted by the captai a ſhip, who attempted to carry her away, but prevented by the interpoſition of another faithful lover: but others think it probable, the ſtory was forged from Jonah's adventure, having embarked at Joppa was caſt into the and ſwallowed by a large fiſh or ſea-monſter, which he was miraculouſly delivered *.

CASSIOPEIA and CEPHEUS were alſo morphoſed into conſtellations.—Cepheus wa of the Argonauts.

---

* Thoſe who wiſh to ſee this moſt difficult portion Sacred Writings ingeniouſly inveſtigated, may conſ new edition of Calmet's admirable Hiſtorical, Critic Chronological Dictionary of the Bible. See Chron. Articles Calmet and Harmer.

PER

was the ſon of Jupiter and Danaë,
of Acriſius king of Argos, by Euri-
grown up, he obtained the helmet
ne buckler of Minerva †, and the fal-
ury ‡ with wings for his feet. By
the

---

the god of the infernal regions, of death,
is helmet rendered the bearer inviſible. He
eſented as holding a trident with two teeth;
in his hand, to intimate that whoever enters
never return. Being conſidered as a hard-
ible god, he is drawn with a ſtern, gloomy,
tenance.

or Pallas, was the goddeſs of wiſdom, war,
ing, and the liberal arts; and the only one of
s whoſe authority and conſequence were equal
iter. She was invoked by almoſt every artiſt;
ſuch as worked in wool, embroidery, paint-
ure. Minerva is repreſented as beautiful, but
s; having on her head a helmet, and on the
me nodding in the air; holding in her right
and in her left a ſhield, called Ægis, becauſe
e ſkin of the goat Amalthæa. In the middle
as the head of Meduſa, which ſometimes was
n her breaſt-plate.

was a celebrated god of antiquity, called
Greeks. He was the meſſenger of the gods,
in particular; he was the patron of travellers;
er eloquence and commerce; and was alſo the
pick-pockets, and all diſhoneſt perſons. Mer-
nted with a winged cap, winged ſandals, and a
and, with two ſerpents twiſted round it: he had
ord, cimeter, or falchion. With theſe he was
into whatever part of the univerſe he pleaſed
eſt celerity. It appears from numberleſs paſſages
n writers, that they ſuppoſed their gods often
ng them in the likeneſs of men. A well-known
s Jupiter and Mercury as having deſcended from
man ſhape, and to have been entertained by
whom' the Lycaonians received their name.
when Paul cured the lame man at Lyſtra, the

the aſſiſtance of theſe he performed ſe
rious actions; for which, after his dea
ceived divine honours, and was placed
conſtellations. When Perſeus reſcued A
he was mounted on the horſe Pegaſus.

PEGASUS was a winged horſe, ſprung
blood of Meduſa, when Perſeus had cu
head. As ſoon as he appeared he left
and flew up into heaven; or rather, ac
Ovid, he fixed his reſidence on Mount H
where, by ſtriking the ground with hi
inſtantly raiſed a fountain, which has b
Hippocrene, from two Greek words, de
horſe's fountain. He became the favourite
and the Muſes †, who made uſe of him

---

multitude, ſeeing what the apoſtle had done, exclai
"gods are come down to us in the likeneſs of me
"called Barnabas Jupiter, and Paul Mercurius," i
attendant, meſſenger, and interpreter of his will. S
8, &c.

> Hermes obeys; with golden pinions binds
> His flying feet, and mounts the Weſtern win
> And whether o'er the ſeas or earth he flies,
> With rapid force they bear him down the ſki

DRYDEN'S

* Helicon was a mountain of Bœotia, in G
forming part of Livadia in European Turkey. It
to the Muſes; who, on this account, have been
called Heliconiades, and Pierides, from Pierus,
of Theſſaly, and Olympiades from mount Olym
ſimilar reaſon.

† The Muſes were certain goddeſſes, who
have preſided over poetry, muſic, dancing, and all
arts. They were nine in number: CLIO preſide
tory; EUTERPE, muſic; THALIA, feſtivals, pa
comic poetry; MELPOMENE, tragedy; TERP

was placed among the conſtellations by

SA, one of the three Gorgons, was ce-
for her perſonal charms, and the beauty
locks. Having violated the ſanctity of
a's temple with Neptune, that goddeſs, in
e, changed the beautiful ringlets which
pired Neptune's love, into ſerpents. Some
that Meduſa and her ſiſters came into the
. with ſnakes on their heads inſtead of hair,
yellow wings, and brazen hands. Their
es were alſo covered with impenetrable ſcales,
their very looks had the power of killing, or
ing into ſtone. Aconteus, one of the ſoldiers
erſeus, was, according to Ovid, changed into
one by looking at the head of Meduſa. Ulyſſes,
Homer, was deſirous of ſeeing more of the de-
ned heroes, but was afraid—

---

ncing; ERATO, lyric and tender poetry; POLYHYM-
IA, ſinging, and rhetoric; CALLIOPE, eloquence, and
roic poetry; and URANIA. aſtronomy. Parnaſſus, a cele-
ated mountain in Greece, was the uſual ſeat of the Muſes,
ough other places are ſaid to have had that honour occa-
nally. See the laſt note.
The Muſes were the daughters of Jupiter and Mnemoſyne.
is word ſignifies Memory; and therefore the poets have
led Memory the mother of the Muſes, becauſe it is to that
ntal endowment that mankind are indebted for their pro-
ſs in ſcience. Apollo. who was the patron and conductor
the Muſes, has received the ſirname of Muſagetes, or
der of the Muſes. The worſhip of the Muſes was univer-
y eſtabliſhed, particularly in the enlightened parts of
eece, Theſſaly, and Italy. They are ſometimes repre-
ted as dancing in a chorus, to intimate the near and indiſ-
ble connexion which exiſts between the liberal arts and
nces. Few poets ever began a poem without a ſolemn in-
ation to the goddeſſes who preſided over verſe.

Leſt Gorgon riſing from th' infernal lakes,
With horrors arm'd, and curls of hiſſing f
Should fix him, ſtiffen'd at the monſtrous ſi
A ſtony image, in eternal night!

Pope's

Meduſa with Gorgonian terror guards
The ford, and of itſelf the water flies
All taſte of living wight.

M

The common opinion is, that they lived n
gardens of the Heſperides; where they com
great ravages, and exerciſed prodigious c
on all paſſengers. Perſeus rendered his na
mortal by decapitating Meduſa.

Caput Medusa, the head of Med
always included in the conſtellation of Perſe
the Celeſtial globe. That conqueror placed
duſa's head on the ægis or ſhield of Mi
which he had uſed in his expedition.

Mythologiſts explain the fable of the Go
by ſuppoſing, that they were a warlike ra
women near the Amazons, whom Perſeus, t
help of a large army, deſtroyed.

The Amazons were a nation of famous w
whoſe lives were employed in wars and manl
ercifes. They are ſaid to have founded an e
ſive empire in Aſia Minor, along the ſhores
Euxine, or Black Sea, and near the celeb
Cappadocian river Thermodon *, which en
itſelf into that ſea at Themiſcyra, the moſt c
of their towns. Some authors, among wh
Strabo, deny the exiſtence of the Amazons
Juſtin and Diodorus particularly ſupport it.

---

* See Reditus Decem Millium Græcorum, in Wil
Atlas Claſſica.

riters, moreover, mention a race of Ama-
Africa, of greater antiquity than thoſe
*.

ES VENATICI are two new conſtellations,
tabliſhed by Hevelius, between the arm of
, and the tail of the Great Bear. The
s called *Aſterion*, being that next the bear's
the other *Chara*. They are held in a ſtring
ötes.

ÖTES. This conſtellation is ſometimes called
river or waggoner;

de o'er the ſpacious regions of the North,
ötes urges on his tardy wain.

THOMSON.

ötes with his wain the North unfolds;
e Southern gate Orion holds.

CLAUDIAN.

e is alſo ſtyled Arctophylax, or the bear-
er—

Behind, and ſeeming to urge on the Bear,
Arctophylax, on earth Boötes nam'd,
Sheds o'er the artic car his ſilver light.

ARATUS.

oötes, ſay ſome, is Lycaon, the father of
liſto: according to others he is Icarius, the
genitor of Erigone: others again maintain him
be Ericthonius, a king of Athens; to whom,
ng himſelf lame, the invention and uſe of

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* See "An Eſſay on the Ancient Amazons," ſubjoined to
Dialogues concerning the Ladies."—Sold by J. MAWMAN,
the Poultry.

coaches, and the manner of harneſſing ho draw them, is attributed *:

> Bold Ericthonius was the firſt who join'd
> Four horſes for the rapid race deſign'd;
> And o'er the duſty wheels preſiding ſate.
>
> DRYDEN'S VIR

MONS MÆNALUS. The ſtony Mænalus, Milton ſtyles this famous eminence, was a mo tain of Arcadia, in Peloponneſus, ſacred to the g Pan; whence he is ſometimes called *Deus Mænal*. It was greatly frequented by ſhepherds; on whi account the phraſe *Verſus Mænalus* denotes pa toral poetry. It received its name from Mæ lus, a ſon of Lycaon, the father of Calliſto, men tioned in article *Urſa Major*.

This mountain was covered with pine-trees; whoſe echo and ſhade have been much celebrated by all the eminent poets of antiquity.

COMA BERENICES is a modern conſtellation, generally ſaid to have been formed by Conon, though ſome make Hipparchus the author of this name. It was done to conſole the Queen of Ptolemy Soter, or Evergetes, for the loſs of a moſt beautiful lock of her hair, which was ſtolen out of the temple of Venus, where ſhe had dedicated it, in conſequence of a vow that ſhe had made for the ſafe return of the above prince her huſband from his Syrian expedition. Conon, it is ſaid, to make his court to the queen, publicly reported that Jupiter had carried it away and made it a conſtellation.

> Then Berenice's locks firſt roſe ſo bright,
> The heav'ns beſpangling with diſhevel'd light.
>
> POPE.

---

* See Urſa Major and Virgo.

Callimachus,

nachus, a famous Greek elegiac poet, wrote
r on Queen Berenice's hair, which is tran-
y Catullus.

CAROLI is a ſingle ſtar of the ſecond mag-
between Aſterion and Chara,* and near
ajor; ſo denominated in memory of our
the Firſt, by Sir Charles Scarborough, phy-
King Charles the Second.

NA BOREALIS is ſaid to be the beauti-
rn of ſeven ſtars, which Bacchus gave to
when he married her, after ſhe was baſely
l by Theſeus. This unfortunate princeſs
e daughter of Minos II. King of Crete.
ame enamoured of Theſeus, who was ſhut
ie famous labyrinth * to be devoured by
notaur; and gave him a clue of thread, by
he extricated himſelf from the different
gs of his confinement. After he had con-
the Minotaur †, Theſeus carried Ariadne
agreeably to the promiſe he had made, and
her; but ungenerouſly forſook her when
ed at Naxos, a noted iſland in the South-
t of the Archipelago, the largeſt and moſt
of all the Cyclades. Bacchus was its chief

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labyrinth is a building whoſe numerous paſſages, and
g windings, render the way from it difficult, and
npracticable. The four famous ones among the
were thoſe of Egypt, Lemnos, Italy, and Crete:
the moſt celebrated in claſſical hiſtory.

e Minotaur was a fabulous monſter of antiquity,
be half a man and half a bull. He is ſaid to have
the choſen young men and maidens, whom the
f Minos yearly exacted from the Athenians, till
delivered his country from the ſhameful tribute.
aſcended the throne of Athens 1235 years B. C.
death of his father Ægeus.

deity.

HERCULES was a famous hero; death, was ranked among the gods, a divine honours. According to the anci were many perſons of the ſame na theſe, the ſon of Jupiter and Alcmena, called the Theban, is the moſt celeb to him the actions of the others hav tributed.

The 12 celebrated labours of Her 1, killing the Nemæan lion; 2, deſtroyi næan hydra; 3, catching a ſtag of incre neſs; 4, taking alive a wild boar wh the vicinity of Erymanthus; 5, cleanin of Augeas, in which 3000 oxen had be for many years; 6, deſtroying the carni which ravaged the country adjacent Stymphalis in Arcadia; 7, bringing ali loponneſus a prodigious wild bull, whi waſte the iſland of Crete; 8, obtainin of Diomedes which fed upon human fle

ay records the labours, and the praiſe,
ll th' immortal acts of Hercules.
how the mighty babe, when ſwath'd in bands,
erpent ſtrangled with his infant hands;
as in years and matchleſs force he grew,
Echalian walls and Trojan overthrew.
s a thouſand hazards they relate,
r'd by Juno's and Euriſtheus' hate.
ands, unconquer'd hero, could ſubdue
loud-born Centaurs, and the monſter crew,
hy reſiſtleſs arm the bull withſtood:
he, the roaring terror of the wood.
riple porter of the Stygian ſeat
lolling tongue lay fawning at thy feet,
ſeiz'd with fear, forgot thy mangled meat.
fernal waters trembled at thy ſight:
god, no face of danger could affright;
uge Typhæus, nor th' unnumber'd ſnake,
s'd with hiſſing heads in Lerna's lake.

DRYDEN'S VIRGIL.

ules is generally repreſented naked, with
and well proportioned limbs; he is ſome-
overed with the ſkin of the Nemæan lion,
ds a knotted club in his hand, on which
n leans. Sometimes he appears crowned
he leaves of the poplar, and holding the
plenty under his arm. At other times he
ſented ſtanding with Cupid, who inſolently
to pieces his arrows and his club, to inti-
e paſſion of love in the hero, who ſuffered
to be beaten and ridiculed by Omphale,
eſſed herſelf in his armour while he was
to ſpin with her female attendants.

BERUS was a dog of Pluto. He had, ac-
g to Heſiod, fifty heads; other mytholo-
y only three. He was ſtationed at the en-
of the infernal regions, as a watchful
keeper,

His creſted ſnakes, and arm'd his

D

It was uſual for thoſe heroes
time, viſited Pluto's kingdom, to
ing mouths of Cerberus with a c

With three enormous mouths he g
With hunger preſs'd, devours the

D

The melodious muſician, Orph
ſleep with his lyre, when he ſo
wiſe Eurydice at the palace of Pl

Lyra, the lyre, is included
This conſtellation was at firſt a t
of its ſlow motion round the po
becauſe it was the ſhell of this re
ſtrings of the lyre were originall
ancient writers aſſert, that thi
Orpheus, which he received fro

There Orpheus on his lyre laments his love [*],
With beaſts encompaſs'd, and a dancing grove.

DRYDEN's VIRGIL.

Orpheus with his lute made trees,
And the mountain tops that freeze,
Bow themſelves when he did ſing [†].

SHAKESPEARE.

fter death Orpheus received divine honours; d his lyre [‡], as we have juſt ſtated, became one f the conſtellations in the heavens.

Some

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[*] His half-regain'd Eurydice. MILTON. See Lem-iere's Dictionary.

[†] Of Henry Lawes, who compoſed the muſic for COMUS, d performed the combined characters of the SPIRIT and ſhepherd THYRSIS in that celebrated drama, Milton, th like poetic licence, ſays, that—

He with his ſoft pipe, and ſmooth-dittied ſong,
Well knows to ſtill the wild winds when they roar,
And huſh the waving woods.

This ingenious vocal and inſtrumental performer was born t Saliſbury in the year 1600 and died in 1662. His brother William Lawes, who was alſo an eminent muſician and compoſer was killed in 1645, at the ſiege of Cheſter in the army f Charles I.

[‡] The lyre was a famous ſtringed inſtrument much uſed among the ancients, ſaid to have been invented by Mercury about the year of the world 2000: though ſome aſcribe the invention to Jubal [*]. It is univerſally allowed, that the lyre was the firſt inſtrument of the ſtringed kind in Greece. The different lyres, at various periods of time, had from four to eighteen ſtrings each. The modern lyre is the Welſh harp. The lyre among painters, &c. is an attribute of Apollo and the Muſes.

[*] See Geneſis, iv. 21.

Lyric

Some learned men, from a paſſage in C have called the exiſtence of Orpheus in q but this opinion cannot diſcredit that of all quity, and of the graveſt hiſtorians. In e account of the Argonautic expedition whic been tranſmitted to us, we find him co mentioned. He was the ſon of Œagar, kin Thrace, by the muſe Calliope; but the brill of his talents cauſed him to be regarded as offspring of Apollo. The fable which de Orpheus as followed by wild beaſts, and even is an allegory to deſcribe his exquiſite ſkill in ſcience of muſic; it likewiſe is meant to ex that he employed his talents in civilizing the r unpoliſhed manners of his time:

Fame ſays, inſpir'd Orpheus firſt began
To ſing God's laws, and make 'em known to man:
Their fierceneſs ſoften'd, ſhew'd them wholeſome f
And frighted all from lawleſs luſt and blood:
And therefore fame hath told, his charming lute
Cou'd tame a lion, and correct a brute.

CREECH'S HORAC

The fable of Amphion's moving ſtones an raiſing the walls of Thebes at the ſound of his lyre, has alſo been explained in the ſame manner, by ſuppoſing that he perſuaded, by his eloquence,

Lyric means ſomething that may be ſung or played on the harp, or lyre; hence lyre verſes, of which the ancients were ſuch great admirers. The characteriſtics of lyric poetry which diſtinguiſh it from all others, are *dignity* and *ſweetneſs*:

His tender theme the charming lyriſt choſe,
Minerva's anger, and the direful woes
Which voyaging from Troy the victors bore.

POPE.

a wild

ncivilized people to unite together
wn to protect themſelves againſt the
ir enemies :

g not ſweeter to his herd,
on'd ſtones the Theban turrets rear'd.

DRYDEN'S VIRGIL.

, as ſtory goes, could call
es to make the Theban wall ;
as he pleas'd, the rocks obey'd,
n order to the tunes he play'd.

CREECH'S HORACE.

CADENS. The vulture, in orni-
e name of a genus of birds of the
There are no vultures in Great-
any North of the Baltic : but the
s are found in the Southern parts of
, Africa, and America, as low as
ego. They are a ſluggiſh, unge-
reying oftener on dead animals, and
d carcaſes, than on living creatures :
f ſmelling is moſt exquiſite : they
ks from great diſtances, and are di-
r prey by the ſagacity of their noſ-
ly ſlowly and heavily ; are greedy
to a proverb ; and they are bold
preying in the midſt of cities, un-
ankind.
the ſwan into which Jupiter tranſ-
lf, to deceive Leda.—See *Gemini*.
ſwan is the largeſt of the Britiſh
ird, perhaps, makes ſo inelegant a
the water, or has the command of
attitudes on that element, as the
ſwan :

ſwan: almoſt every poet has taken n
but none with ſuch juſtneſs of deſcri
ſo pictureſque a manner as our Milton:-

The ſwan, with arched neck *
Between her white wings mantling proudl
Her ſtate with oary feet.
PAR. LO

Swans were by the ancients conſec
Apollo and the Muſes; and upon this id
to have been engrafted the notion which
of their being endowed with a muſical
In time, a ſwan became a common tro
bard †. Beſides this opinion, the ancients

---

* The ancient poets have not, it has been obſer
upon this beauty, laviſh as they have been in the de
of the ſwan. *Her wings mantling proudly*; her w
then a little detached from her ſides, raiſed and ſpre
mantle, which ſhe does with apparent pride, as is alſo
her whole figure, attitude, and motion:

Emblem of modeſt grace,
Of unaffected dignity and eaſe,
Of pure and elegant ſimplicity. EU

† The ſwan, ſays the learned author of EUDOS
been probably in all ages, and in every country, wh
and elegance have been cultivated, the emblem of poeti
nity, ſimply and unaffectedly majeſtic. The equal ſl
perfect ſymmetry, the purity, the genuine graces and
elegance of diction, ſentiment, and compoſition whic
guiſh the prince of Roman poets, have appropriated
the epithet of the *Mantuan Swan* *. Pindar, of
the prince of Lyric poets, who was born about 500 yea
is ſtyled the *Theban Swan*.

* Virgil is, however, uſually called the *Mantuan Sw*

ded that this bird foretold its own end, and g more ſweetly at the approach of death—

> ———She, like the ſwan
> Expiring, dies in melody.
>
> ÆSCHYLUS.

he cauſe of this is beautifully explained by o, who attributes that unuſual melody to the ſort of ecſtaſy that good men are ſometimes to enjoy at that awful hour, foreſeeing the that are preparing for them on putting off tality.

he wild ſwan is found in Ruſſia, Siberia, and t the Southern parts of the Caſpian Sea. Theſe are very large, and much eſteemed for the . The wild ſwan is very long-lived, fre- itly arriving at its hundredth year. In er times, the ſwan was ſerved up at every t feaſt, when the elegance of the table was ured by the ſize and quantity of the good r. Cygnets are to this day, it is ſaid, fat- l at Norwich, about Chriſtmas, and ſold for inea a-piece.

ULPECULA, the fox. A fox, in zoology, animal of the dog kind. His craftineſs is erbial. Of all animals, the fox has the moſt ficant eye, by which it expreſſes every paſ- He is a native of moſt Northern countries; is ſkin, being furniſhed with a ſoft warm fur, d in many parts of Europe to make muffs ine cloths. In France and Italy the fox does dible damage in the vineyards, by eating the s, of which it is remarkably fond. See non's Song, chap. ii. ver. 15.

When Gallic foes forſook their hon
T' invade the warlike ſons of Rome
Bold with ſucceſs, at midnight hour
They climb'd the heights of Jove's
When all the guards were lock'd in
And left expos'd the craggy ſteep:
The valiant geeſe then rais'd alarms,
And rous'd the Romans to their arm
Who forc'd the Gauls to take their
And quick deſcend the mountain's h

FUGI

Geeſe were kept in the temple
the cenſors, perſons appointed to co
ners of the people, when they ente
office, provided food for them. T
an annual feaſt at Rome, at which
a ſilver image of a gooſe, in ſtate;

---

* The capitol was a famous fort, or caſ

dog, to puniſh that animal becauſe he did not bark at the arrival of the Gauls [*].

Lacidas, a Greek philoſopher of Cyrene, who flouriſhed 241 years B. C. is ſaid to have diſgraced himſelf by the magnificent funeral with which he honoured a favourite gooſe. See LEMPRIERE's Dictionary.

LACERTO STEELLIO. Lizard, in zoology, is the name of a large genus of animals, comprehending all thoſe quadrupeds which are oviparous, and have long tails continued from their bodies. It lives in caverns, ruins, and deſolate places, and is often uſed for medicinal purpoſes :

> The lizard with an humble light appears.
> Haply this creature human gratitude
> Rais'd to the ſky: ſaid to forewarn the bite
> Of venom'd ſerpents, and the ſignal give,
> Preſcient, VESUVIUS[†]! of thy gathering flames.
>
> EUDOSIA.

CAMELOPARDALUS. This is a new conſtellation, formed by Hevelius. It is ſituated between Cepheus, Caſſiopeia, Perſeus, the two Bears, and Draco.

The Camelopardalus, in zoology, is an animal of a very ſingular kind, and ſeeming properly to belong to no known genus of animals. It is called Camelopardalus by Latin authors; Giraffa and Zurnapa by Eaſtern nations. Linnæus makes it a ſpecies of the ſtag kind, though its ſhape is wholly different from thoſe of that genu an elegant and handſome creature, be ſpotted all over its body, in the manne leopard; remarkably tame and tractabl ſcarcely leſs ſo than a ſheep; and ſeems i by nature for a domeſtic, not a ſavage It is very like the camel in all its natural ties, and is found in Ethiopia, and other p Africa. The horns and hoofs raſped, pulv and taken inwardly, are good for the epi and reſiſt poiſon.

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[*] See on the ſubject of geeſe, the Author's Arithmetical Queſtions.

[†] See Arith. Queſt. and Chron. Tab.

SERPENS. This conſtellation, uſually c Serpens Ophiuchi, is placed North of Libra, tween Boötes and Serpentarius.

Serpents, in the Linnæan ſyſtem of zoolo are an order of animals belonging to the claſs amphibia, comprehending ſix genera.

The ſerpent, it has been remarked, has fro the beginning been the enemy of man; and it h hitherto continued to terrify and annoy him, no withſtanding all the arts which have been prac tiſed to deſtroy it. Mankind have driven th lion, the tiger, and the wolf, from their vicinity but the ſnake and the viper ſtill defy their powe Their numbers, however, are thinned by huma aſſiduity; and it is probable that ſome of the kind are wholly deſtroyed.

It is ſuppoſed, that in early times, when th arts were little known, and mankind were bu thinly ſcattered over the earth, ſerpents, conti nuing undiſturbed poſſeſſors of the foreſt, grew t in amazing magnitude, and every other tribe nimals fell before them. It then might hav appened, that ſerpents reigned the tyrants of iſtrict for centuries together. To animals of th nd, grown by time and rapacity to 100 or 15

length, the lion, the tyger, and even the
t itſelf, were but feeble opponents.
are told, that while Regulus, the famous
general, led his army along the banks of
er Bagrada, which emptied itſelf into the
ween Carthage and Utica, in Africa, an
us ſerpent diſputed his paſſage over. We
red by Pliny, that it was 120 feet long;
t it had deſtroyed many of the army. At
wever, the battering engines were brought
ainſt it, and it was deſtroyed. Its ſpoils
arried to Rome, and the general was de-
an ovation for his ſucceſs. There are,
, few facts better aſcertained in hiſtory
is: an ovation was a remarkable honour,
s given only for ſome ſignal exploit, that
t deſerve a triumph.—No hiſtory could
invent that part of the ſtory, at the leaſt,
: being ſubject to the moſt ſhameful detec-
The ſkin was kept for ſeveral years after
capitol; and Pliny aſſerts that he himſelf
here.

following lines contain the deſcription of a
ſerpent:

ad he finiſh'd, when, with ſpeckled pride,
nt from the tomb began to glide;
y bulk on ſev'n high volumes roll'd;

Serpents, in modern times, appear, fr unimpeached teſtimony of travellers, to g an enormous ſize; being found from 30 and ſometimes to 50 feet long; particularly iſland of Java, in the Eaſt-Indies; where, aſſured, that one of them will deſtroy and d a buffalo. They prey indiſcriminately upon ever has life; the ſtag, the goat, the tiger, gazelle, and even porcupines, with all their q have frequently been found in the ſtomach theſe gluttonous creatures. No animal upon ea however, can bear abſtinence ſo long as the ſer tribe; ſome of which can ſupport famine, only for weeks and months, but for years togeth

There is a ſerpent in Egypt, called the ceraſt or horned viper; ſuppoſed by ſome to be the which Cleopatra employed to terminate her di ſipated life by an eaſy death. The bite of th animal cauſes almoſt inſtantaneous diſſolution, with out any appearance of diſtemper or hiccough Having applied the aſp, either to her boſom o her arms, this enchanting, but diſſolute woman expired in a gentle ſleep:

High-minded Cleopatra, that with ſtroke
Of aſp's ſting herſelf did kill.

SPENSE

The various Iris, Juno ſends with haſte,
—— on equal wings ſhe pois'd her weight,
And form'd a radiant rainbow in her flight.

DRYDEN'S VIRGI

She is the ſame as the rainbow; and, from that circumſtan is repreſented with all the variegated and beautiful colours he rainbow, and appears ſitting behind Juno to execute ommands.

Bo

oth Volney and Bruce have expatiated on the ious ſubject of the incantation of a particular s of ſerpents, and they entertain no doubt of reality; it is certainly alluded to in Holy it.—See Pſalm lviii. 4, 5. Eccleſ. x. 11. and em. viii. 17. Some of the natives can play th the ceraſtes, which to them is perfectly harms; for it will not attempt to injure them: but en applied to a hen, or any other animal, they re inſtantly bit and killed them: ſo that, according to theſe reſpectable writers, the ſecret nſiſted, not in depriving the animal of its xious powers, but in ſome irreſiſtible charm. me of the negroes in America and the Weſtdies are ſaid to poſſeſs the power of charming the oſt venemous ſerpents, by drinking the juice of particular plant, and inoculating themſelves with ome of the ſame liquid *. Serpents were anciently worſhipped in Egypt, and many other parts of the world. Many of the heathens thought that there was ſomething divine in the nature of ſerpents; and that deities, or good genii, who were made uſe of as the inſtruments of delivering and honouring thoſe that were the peculiar favourites of the gods, often appeared in that ſhape. Hence idols were often made with ſerpents near them; and there have een numerous, and indeed aſtoniſhing inſtances f *religious worſhip* paid to that kind of animal, upid and abſurd as it may ſeem. See Doddridge's am. Expoſ. vol. iii. p. 425, and vol. iv. p. 21.

The faſcinating power aſcribed to ſerpents, pecially to rattleſnakes, by which they are ſaid draw animals irreſiſtibly to them, by fixing their eyes upon them, has been believe Mead, and many other perſons of gre tration and diſcernment, who have that they had ſufficient evidence for admit fact; and ſome recent teſtimonies of travellers ſeem to put the matter beyond all diſpute.

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* See Mont. Mag. for May 1802, p. 372.

The facetious Peter Pindar has, in a late cation, delighted his numerous readers w following beautiful and ſimple diſplay rattleſnake's power of faſcination:

Thus when the wily SNAKE, beneath a tree,
Darts his red eyes upon his feather'd prey,
Poor bird! no more he ſwells the ſong of love,
Waves the wild wing, and glides from grove to gr
With panting heart he tries to ſhun the foe,
But, looking on the ſteady FIEND below,
In chains of fatal faſcination bound,
The captive hops around him and around:
'Till nearer, nearer drawn, with helpleſs cries,
He drops upon the poiſoned fang, and dies.

SERPENTARIUS is alſo called Ophiuchus, a anciently Æſculapius. The ſerpent was the ſy bol of medicine, and of the gods which preſid over it, as of Apollo and Æſculapius. See Apol and Æſculapius.

SCUTUM SOBIESKI was ſo named by Hev lius, in honour of John Sobieſki, king of Polan ſo juſtly famous for having raiſed the ſiege Vienna, when that city was inveſted by the Turk in the year 1683. The emperor Leopold was this period driven from his capital; and he owe his preſervation ſolely to the ſuccours brough him by the king of Poland, who thus ſaved th capital of the empire when it was reduced to th

la

xtremity, and prevented Auſtria from paſſing
r the Ottoman yoke. The arms of Prince
ne * afterwards recovered Hungary from the
s; and finally the genius and fortune of the
of Marlborough *, by the memorable vic-
of Blenheim *, expelled the French from
heart of Germany, humbled Louis XIV.
elevated Leopold to the ſummit of human
neſs. Hevelius's catalogue of the fixed ſtars,
ed, "Firmamentum Sobieſkianum," was
ated to the ſame monarch.

ieſki is alſo memorable for having made a
gious ſlaughter of the Turks at Choczim, in
avia, in 1674, where he commanded the
army; and for which ſervice, on the death
ichael, he was moſt deſervedly choſen king
land; for the gaining of this battle extri-
Poland from a deplorable ſtate of humilia-
and freed the Poles from an ignominious
te to the Porte. Sobieſki died in 1696, and
him fell the glory of Poland. See Chron.
and "Mr. JONES's Hiſtory of Poland,"
1795.) p. 205—212.

his heroic monarch expired at Villanow, his
urite reſidence. It was built in a plain about
leagues from Warſaw, near a branch of the
ula. The architecture is elegant and grand,
ing been conſtructed by an Italian under
ieſki's reign. The gardens are princely, and
of large and venerable trees that ſhed a gloom
r the walks.

} See Chron. Tab.

Such

Courts of Berlin, &c. vol. ii. p. 119,

Aquila is a conſtellation uſually
Antinoüs. Aquila is ſuppoſed to hav
rops, a king of the iſland of Cos, ir
pelago, and the huſband of Clymene,
of Phaeton; this monarch having been
into an eagle, and placed among the co
Some have imagined, that Aquila wa
whoſe form Jupiter aſſumed when he c
Ganymede.—See *Aquarius*.

The eagle is juſtly ſtyled by "
Tyne," the "ſovereign of birds [*];'
the largeſt, ſtrongeſt, and ſwifteſt of
thered tribe that live by prey. Its a
is uſually on the higheſt rocks, ſomet
tops of old trees. Its food is birds, h
kids, fawns, and even ſometimes child
are remarkable for their longevity, a
faculty of ſuſtaining a long abſence
Keyſler [†] relates, that an eagle diec

nfinement of 104 years: which fully e alluſion of the Pſalmiſt, Pſalm ciii. 5. quick, ſtrong, and piercing to a pro- xxxix. 28, &c. &c. a portion of hich is thus paraphraſed by the cele- hor of the "Night Thoughts:"

trong the hawk, tho' practis'd well to fly *,
drops her in the lower ſky;
when, deſerting human ſight,
the ſun in her unweary'd flight:
r above the world ſhe dwells alone,
dly makes the ſtrength of rocks her own;
ide o'er nature takes her dread ſurvey †,
a glance predeſtinates her prey.
her young with blood, and, hov'ring o'er
ughter'd hoſt, enjoys the promis'd gore.

YOUNG.

e, in heraldry, is the ſymbol of royalty, he king of birds; and for that reaſon ated by the ancients to Jupiter.

le has been borne, by way of enſign d, by ſeveral nations, particularly by ns and Romans. The eagle with two otes, it is imagined, two emperors on . An eagle on medals imports empire, or providence: with the word *conſecratio* it expreſſes the apotheoſis of an emperor. le letting a tortoiſe fall on the head of , a tragic poet of Athens, cauſed his death

---

Egyptians, in conſequence of its ſwiftneſs, made eir ſymbol for the wind. Thuanus mentions one from Paris to London in a night.

eagle is ſaid to be of ſo acute a ſight, that when h in the air that man cannot perceive her, ſhe can ſmalleſt fiſh under water.

in the 69th year of his age. This event occu
at Gela in Sicily, and the Sicilians honoured h
with a magnificent funeral. See LEMPRIE
Dictionary.

ANTINOÜS is a part of the conſtellatio
Aquila, as we have already remarked in the p
ceding article. Antinoüs was a youth of Bithy
a country of Aſia Minor, South of the Euxine
Black Sea. He was a great favourite with Adri
Being drowned in the Nile, or, according to o
accounts, offering himſelf at a ſacrifice as a
tim, in honour of the Emperor, that Prince
only erected a temple to his memory at his de
but deified him, and made him a conſtellation.

DELPHINUS. This fiſh, according to ſo
mythologiſts, was made a conſtellation by N
tune, becauſe a dolphin had perſuaded the god
Amphitrite, who had made a vow of perpet
celibacy, to become the wife of that deity; b
others maintain, that it is the dolphin which p
ſerved the famous lyric poet and muſician Ario
who was a native of Leſbos, an iſland in t
Archipelago. He went to Italy with Periande
tyrant of Corinth, where he obtained immen
riches by his profeſſion. Wiſhing to reviſit h
native country, the ſailors of the ſhip in whi
he embarked reſolved to murder him, to get poſ
ſeſſion of his wealth. Seeing them immoveabl
in their reſolution, Arion begged permiſſion t
play a tune upon his lute * before he ſhould b
put to death. The melody of the inſtrument attracted

---

* The lute is a muſical inſtrument of the ſtringed kind; which had anciently but five rows of ſtrings; though, in courſe of time, four, five, or ſix more have been added :—

In

f dolphins round the ſhip; he
pitated himſelf into the ſea;
, it is aſſerted, carried him ſafe
ıarus, a promontory of Laconia,
vhence he haſtened to the court
ordered all the ſailors to be
return.

poets ſeem to have contended
moſt fables concerning the dol-
ecrated to the gods; was cele-
eſt time for its fondneſs of the
honoured with the title of the
tinguiſhed by thoſe of *boy-loving*
Some of the ancients ſeem to
ls in their belief of the tales
iſh's attachment to mankind.
nt could happen at ſea, but the
nſelf to convey to ſhore the un-
The ſtory of Arion's being
volent fiſh is related by Ovid:

a dolphin's arched back
from his deſtin'd wrack;
ınd with harmonious ſtrains
ırer for his friendly pains.

FASTI, Lib. ii. 113.

e at a loſs to account for the
bles; ſince it does not appear,
ſhews a greater attachment to

---

y pleaſing ſtrain
warbling lute complain.

POPE's ST. CECILIA.

a, in Italy, are eſteemed the beſt, on
which is ſaid to have an uncommon
g a ſweet ſound.

the human ſpecies than the reſt of the
tribe. At preſent, the appearance of th
far from being eſteemed a favourable
ſeamen; for its boundings, ſprings,
in the water, are held to be ſure fig
approaching gale. It is from their leap
that element, that they aſſume a tempor
that is not natural to them; but which
poets, painters, and ſculptors have almo
given them:

> Upon the ſwelling waves the dolphins ſhow
> Their bending backs; then, ſwiftly darting, g
> And in a thouſand wreaths their bodies throw.

SENEC. TRAG. AG

The natural ſhape of the dolphin, howe
not incurvated, but almoſt ſtraight. It is
tremely ſwift ſwimming fiſh; and is able t
a long time out of the water. Its name i
poſed to be derived from a Greek word, de
pig, or hog, from its reſemblance to that cr

EQUULUS, or the little horſe, is ſaid
the brother of Pegaſus.

AURIGA, the charioteer, is by ſome ſu
to be the aſpiring Phaeton, a ſon of the Sun;
having obtained permiſſion to drive his fa
chariot for a day, betrayed ſuch ignoranc
incapacity in conducting it, that Jupiter, t
vent an univerſal conflagration, ſtruck hir
one of his thunderbolts, and hurled him
long into the river Eridanus, now called t
in Italy:

> Here he who drove the ſun's bright chariot lie
> His father's fiery ſteeds he could not guide,
> But in the glorious enterprize he died.

OVID by ADI

ody, conſumed with fire, was found by the
of the place, and honoured with a decent
His ſiſters, and his friend and relation
greatly bewailed his unhappy end: the
vere changed into poplars by Jupiter, and
r into a ſwan:

> enus lov'd unhappy Phaeton,
> ng his loſs in poplar groves alone,
> h the ſiſter-ſhades to ſooth his grief:
> heard his ſong and haſten'd his relief;
> ang'd to ſnowy plumes his hoary hair,
> ing'd his flight to ſing aloft in air.
>
> DRYDEN'S VIRGIL.

ding to thoſe who explain this poetical
haeton was a Ligurian Prince, who ſtudied
ny; and in whoſe age the neighbourhood
ridanus was viſited with uncommon heats.
goat, included in the conſtellation Auriga,
ctured by ſome to have been the one with
milk Amalthea nurſed Jupiter in his na-
nd Crete: but others maintain, that that
is the ſign Capricorn, as we have before
d under that article.

TTA, the arrow. An arrow is a miſſile
of offence, ſlender, pointed, and barbed,
aſt or ſhot from a bow. Darts are thrown
hand; but in poetry they are often con-
l. The bows were made of the wood of
v:

> e eugh obedient to the bender's will.
>
> SPENSER.

> ' elaſtic yew, whoſe diſtant wound
> ith England's rivals heap'd the ground.
>
> WILLIAMS'S MISCELLANIES.

This tree is remarkable for its t elaſticity, and is verdant throughout

——The diſtinguiſh'd yew is eve
Unchang'd his branch, and permane

The origin of planting it in churc it is ſaid, to ſecure it from cattle * ; think that it was on account of evergreen, and furniſhing boughs fo tion of churches at the ſeaſon of Chr ſituation and the gloomy darkneſs have cauſed it to be named " the fu This tree has always lain under the poſſeſſing noxious qualities. It is th dicial to bees; and horſes and cow killed by eating quantities of its clip are even inſtances of a ſmall doſe leaves proving fatal to children to v given as a remedy for the worms †.

The art of ſhooting with a bow termed archery. Archers were mu in the armies of former times: but laid aſide, excepting in Turkey ‡;

---

* In the church-yard of Aldworth in Ber tree of prodigious bulk, the trunk meaſurin circumference at upwards of four feet from th ſhape is very regular, of an urn-like form. ſpread to a conſiderable diſtance and riſe to All recollection of its age is entirely loſt.

BEAUTIES

† See the Woodland Companion, page 87

‡ Lady Craven, now Margravine of Anſ Calmucs in the Crimea, who were ſo dextrou arrows, that one killed a gooſe at the diſtanc and another broke an egg at 50 paces *.

TRA

* A pace is five feet.

e Eaſtern countries *. The Engliſh, of all the uropean nations, are generally allowed to have en the beſt

"Skill'd in fight their crooked bows to bend †."

cordingly our Chroniclers ſtate, that their dex-ity in the uſe of this weapon procured them ny ſignal victories, particularly thoſe of Creſſy, ictiers, and Agincourt, over the French, and it of Homildon over the Scots. And long before ſe famous battles were fought, Henry the IId. d ſucceeded in the enterpriſe of conquering Ire-d, chiefly by the uſe of the long-bow, with ich the Iriſh were at that period (1172) tirely unacquainted.

So may thy bow's unerring yew
Its ſhafts in Roderick's ‡ heart imbrew.

WARTON's Grave of King Arthur §.

But,

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* The Perſians, who in the Scripture are called Elamites, re the moſt expert archers in the world.

CALMET's Dict. new edit. Art. Bow.

† And it appears by the following anecdote, that the tives of Cheſhire excelled in this exerciſe. In the year 97, in the reign of Richard II. Weſtminſter-Hall being an extremely ruinous ſtate, that monarch built a temporary om for his parliament, formed with wood and covered with les. It was open on all ſides, that the conſtituents might e every thing that was ſaid and done; and, *to ſecure freedom f debate*, he ſurrounded the houſe with 4,000 *Cheſhire* ar-hers, with bows bent and arrows knocked ready to ſhoot. his fully anſwered the intent; for every ſacrifice was made o the royal pleaſure. PENNANT's London, p. 89. edit. 3.

‡ King of Connaught, commonly called O' Connor Dun, r the Brown Monarch of Ireland, who had raiſed a rebel-ion in that country.

§ The bow, however, proved fatal to three of our Kings, amely, Harold, William the Second, and Richard the Firſt.

But, notwithſtanding the acknow
riority of our countrymen in this
their collective capacity, no inſtan
individual expertneſs have been reco
can be placed in competition with t
ſequent well-atteſted relations : •

Aster, an archer of Amphipolis,
the river Strymon, between Macedoni
offered his ſervice to King Philip, as
a markſman, that he could bring do
their moſt rapid flight. The monar
anſwer, "Well, I will take you into
when I make war upon ſtarlings;"
reply which ſtung the archer to the q
partee proves often of fatal conſequ
who makes it; and ſo it proved in th
for Aſter, being thus ſcornfully rej
himſelf into Methone, a ſmall city
ponneſus, which that wily monarch w
ſieging. From this place Aſter aim

Harold was killed by an arrow at the battl
William was ſlain by an arrow in the New F

> Lo, Rufus, tugging at the deadly dart,
> Bleeds in the foreſt like a wounded har

And Richard received his death-wound from th
at the ſiege of the Caſtle of Chalus, near L
Department of Upper Vienne, France.

William the IId. was ſurnamed Rufus on
having had red hair. The cuſtom of giving p
children from any accident, place, or quality bel
or their parents, is very ancient, as may be ſee
and in the oldeſt profane poet:

> To his lov'd infant Hector gave the name
> Scamandrius, from Scamander's honour'd

Po

n which was written, *To Philip's right*
e gave a moſt cruel proof how well

ill'd to direct the flying dart aright,"

tually extinguiſhed the ſight of the
t eye. Philip returned the fatal im-
th this inſcription, *If Philip takes the*
'll hang up After; and the conqueror
rd.

r inſtance alluded to is that of the illuſ-
s Patriot WILLIAM TELL, a native of
Aldorf, in the Canton of Uri, who by a
of heroic virtue broke the ſhackles of
aſſerted the native rights of man, and
untrymen from the capricious inſolence
tyrant. The tranſaction is as follows:
year 1300, the Emperor Albert * ap-
e Swiſs an Auſtrian Governor, one
ho in the wantonneſs of uncontrolled
ed his hat to be fixed on a pole in the
ce of Altorf, with a command to all
upon pain of death, to reverence *it* as
l his *Mightineſs* himſelf were he per-
eſent. TELL's manly ſpirit revolting
grading mandate, he diſdained to pay
homage, and in conſequence was ordered
ed if he did not, at a certain diſtance,
pple from the head of his own ſon.

---

was aſſaſſinated in the year 1308 by his own
the preſence of his court and army, on the
river Prus, in the neighbourhood of Swiſſer-
o ſovereign was ever leſs regretted, though few
re tragically.

The dextrous archer ſ

"With
"From the tough bow h

and had the good fortun
without hurting the child
ing a ſecond arrow under
for what purpoſe that wa
ſigned for thee," repli
"if I had killed my
vernor, for this heroic
perpetual impriſonment,
accounts, to be hanged;
animated by his fortitu
arms, attacked and van
ſhot to death by TELL.
independency took place
the origin of the freed
enjoy; and never were
the "Mountain Nymph,

---

* The identical bow and
perilous occaſion, are ſtill pr
Switzerland, vol. i. p. 81.

† See Chron. Tab. 3d edi

‡ Dr. Newton ſuppoſes
"mountain-nymph" becauſe
countries have generally prefe
the Britons in Wales, and the
Switzerland. Mr. Warton, in
poems, believes that when he w
of the Oreads * of the Gr
haunts among the romantic mo
fully deſcribed in Homer's hyn
alluſion is poetical.

* See Oreades, Lempriere's Dict.

† Piſa was a town of Elis on the
Grecia Antiqua, in Wilkinſon's At

arkable than in that happy country. The
ſoil, which lay neglected under cruel and
nnical maſters, now appears cultivated; the
gy rocks are covered with vines; and the
heath, tilled by the hands of freedom, is
me a fruitful plain.

h, LIBERTY, thou goddeſs heav'nly bright,
rofuſe of bliſs, and pregnant with delight!
ternal pleaſures in thy preſence reign,
nd ſmiling plenty leads thy wanton train:
as'd of her load, ſubjection grows more light,
nd poverty looks cheerful in thy ſight;
hou mak'ſt the gloomy face of nature gay,
iv'ſt beauty to the ſun, and pleaſure to the day.

ADDISON.

he manners of the Swiſs are ſimple, and un-
ted with luxury; their minds are as enlight-
l as thoſe of any people in Europe; their re-
on is mild; their attachment to their govern-
t is ſtrong; and they love their country with
legree of tenderneſs and enthuſiaſm which
cely any other nation has ever diſplayed *.
a word, they are brave, well-informed, vir-
us, and happy.

elvetian Vales! where Freedom fix'd her ſway,
nd all the ſocial virtues lov'd to ſtray;
oſt bliſsful ſeats of undiſturb'd repoſe,
ever'd, for ages, by contending foes.

JACOBINISM.

o conclude: there are few countries—perhaps
re is no one—in whoſe annals are recorded

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* See page 19.

more noble achievements—more romantic exploits—more claſſic pictures of devoted attachment to the cauſe of liberty, than Swiſſerland; no people have fought harder battles for their native rights than the Swiſs*; and none ever enjoyed their well-earned independence with more dignity and moderation: but as the government of this once happy diſtrict has been recently deracinated by the arms of the French Republic, and as the Swiſs are at this moment (October 1802) goaded by tyrannical oppreſſions into an unequal conteſt with that world-beſtriding nation†, it is more than probable, that theſe delightful alpine regions have ceaſed, perhaps for ever, to be the abode of freedom and of happineſs. Inheriting "Blood fetched from fathers of war proof," the ſtruggle on the part of the brave Swiſs will be ardent; and their cauſe will excite the ſtrongeſt emotions of generous ſympathy in the breaſts of all who prize the virtues which belong to good citizens and the duties that men owe to their country.

LYNX. This conſtellation was made by Hevelius out of unformed ſtars.

Lynx, in zoölogy, is the name of a very fierc beaſt of prey, called in Engliſh the Ounce. Thi animal, in the Linnæan ſyſtem, is a ſpecies c felis, or cat, with a ſhort tail, black at the end and ears tufted with black long hairs. The principal colours of this creature are a whitiſh and purple yellow, variegated with numerous ver beautiful round ſpots like eyes, in the manner c

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* See Chron. Tab. Art. Morat, Sempach, and Marigna

† ——He doth beſtride the narrow world
Like a Coloſſus. SHAKESPEAR

th

ard; theſe are uſually black. The lynx wild in Italy and Germany; but the number are in Aſia, and theſe are much oured than the European. They all differ ably from one another, at times, in the and diſpoſition of their ſpots. There are, er, ſeveral varieties, differing greatly in d colour. Their furs, which are valuable eir ſoftneſs and warmth, are imported lly from the North of Europe, Aſia, and ica. The lynx's eyes are extremely bright vivid, and ſhew plainly that he has a very ing ſight:

> hat modes of ſight betwixt each wide extreme,
> he mole's dim curtain, and the lynx's beam.
>
> POPE.

RIANGULUM. This conſtellation is ſaid to ve been placed in the heavens in honour of gypt, which is, at leaſt its moſt fertile part, the ita*, of a triangular form. The name, however, is common to two conſtellations; the one w under conſideration in the Northern hemihere, called ſimply Triangulum, or Triangum Cœleſti; the other in the Southern hemihere, denominated Triangulum Auſtralis.

A triangle, in geometry, is a figure compreended under three lines, or ſides, and which of onſequence has three angles.

MUSCA, the Fly. Fly, in natural hiſtory, is large order of inſects, the diſtinguiſhing chacteriſtic of which is, that their wings are tranſarent, and have not any of that powder which found on the wings of butterflies. By this plain character they are diſtinguiſhed fr claſſes of winged inſects. There are m ſubdiviſions of flies. See Reaumur's Hiſt. ſects, tom. 4.

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* So called, perhaps, from its triangular ſhape, being at of the Greek letter of that name Δ.

The tyrant Domitian, who made himſel peror of Rome at the death of his brother whom, according to ſome accounts, he deſtroy poiſon, uſually paſſed the greateſt part of the catching flies and killing them with a bodk that it was wittily anſwered by Vibius to a ſon who aſked him who was with the Em "Nobody, not even a fly *."

Very different was the conduct of the be lent old gentleman mentioned by Sterne. H ing been a long time plagued with a great fly buzzed about his face all dinner-time, at len after many efforts, he caught it. Inſtead cruſhing it to death, he held it carefully in hand, and opening the window, "Go (ſaid —get thee gone, poor creature; I won't hu hair of thy head; ſurely the world is wide eno for thee and me." In the ſame benign ſpirit of our poets has written ſome very pretty line a fly that came to partake with him of his w They begin

> Buſy, curious, thirſty fly,
> Drink with me, and drink as I:
> Welcome freely to my cup,
> Could'ſt thou ſip and ſip it up †.

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* Domitian, after exerciſing every ſpecies of cr upon the beſotted Roman people, at length periſhed by hand of Stephanus, a comptroller of the houſehold, A. 96, in the 45th year of his age, and the 15th of his re He was the laſt of the twelve Cæſars.

† The ſequel may be ſeen in a ſmall, but intereſting lication by Miſs Aikin, entitled "Poetry for Children."

wing pathetic incident has been ad-
ufficient proof of the humanity of Xe-
ne celebrated Grecian philoſopher ; a
hich was purſued by a hawk, flew into
, he afforded it protection till its enemy
of ſight, and then let it go, ſaying,
would never betray a ſuppliant."

nnot conclude this article without taking
ty of remarking, that it is the indiſ-
duty of inſtructors to inculcate a com-
e diſpoſition in their pupils toward the
creation ; inaſmuch as kindneſs to ani-
as an important connexion with humanity
is mankind. Every ſingle act of cruelty,
n ingenious writer *, contributes ſomething
rds generating in the mind a habit of cruelty,
n other words, a cruel diſpoſition ; and when
habit or diſpoſition is once produced, it will
nicely diſcriminate its objects, nor confine
f to one particular : it will exert its malig-
t influence upon whatever happens to come in
way, not much regarding whether it be man
eaſt.

t was well remarked by the late much-lamented
Darwin, that to deſtroy even inſects wantonly
ws an unreflecting mind, or a depraved heart ;
the following ſtory, related by that eminent
iter, affords a ſtriking inſtance how peculi-
y diſguſting cruelty appears in the *female ſex*.
A young gentleman once aſſured me, that he
lately fallen in love with a young lady ; but,
their walking out one evening in ſummer, ſh
k two or three ſteps out of her way on th

---

[*] See an excellent little treatiſe " On Humanity
nimals," by Thomas Young, A. M.

gr

gravel walk to tread upon an inſect; an
afterwards, whenever the idea of her ca
his mind, it was attended with this pic
active cruelty; till that of the lady ceaſed
agreeable, and he relinquiſhed his deſign of
ſhip *." A man of great ſenſibility and
feelings may, perhaps, extend his abhorre
cruelty ſtill farther, and ſay with the bene
Cowper:

> I would not enter upon my liſt of *friends*,
> (Though grac'd with poliſh'd manners and fine
> Yet wanting ſenſibility) the *man*
> Who needleſsly ſets foot upon a worm.
>
> TASK, Boo

A man of humanity, ſays Mr. Young,
avoid treading upon worms, ſnails, and other
ſects in his walks. He will remember th
humane lines of Shakeſpeare:

> The ſenſe of death is moſt in apprehenſion;
> And the poor beetle that we tread upon,
> In corporal ſufferance, feels a pang as great
> As when a giant dies.

The manner of communicating a benevolent
ſympathy to *children*, ſays Dr. Darwin, conſiſt
in expreſſing our own ſympathy when any thing
cruel preſents itſelf; as in the deſtruction of a
inſect; or when actions of cruelty are related i
books or in converſation. The lady, he ſubjoins,
who poſſeſſes the Chriſtian virtue of COMPASSION,
cannot but be a good daughter, a good wife, and
a good mother, that is, an amiable character in
every department of life.

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* A Plan for Female Education, Sect. 17.

N CONSTELLATIONS.

n hemiſphere contains thirty-two including thoſe which have been imes; their names are as follow :—

ons.	Engliſh Names.
	The Whale.
	Eridanus.
	Phœnix.
	Toucan.
	Orion.
	The Unicorn.
	The Great Dog.
	The Bird of Paradiſe.
	The Hydra.
iiæ	The Sextant of Urania.
	The Cup.
	The Raven.
	The Centaur.
	The Wolf.
	The Altar.
Auſtrale	The Southern Triangle.
	The Peacock.
ralis	The Southern Crown.
	The Crane.
lis	The Southern Fiſh.
	The Hare.
achi	Noah's Dove.
i	Charles's Oak.
	The Croſs.
	The Ship Argo.
	The Leſſer Dog.
	The Bee.
	The Swallow.

Indus

Indus	The Indian.
Cameleon	The Cameleon.
Piſcis Volans	The Flying Fiſh.
Xiphias	The Sword Fiſh.

The poetical ſtories concerning ſome o Southern conſtellations are as follow :

CETUS, the Whale, is repreſented b poets as the ſea-monſter that Neptune, at th of the nymphs, ſent to devour Androme the pride of her mother, and which, as we before ſtated, was killed by Perſeus. See pag

The whale, in zoölogy, is the largeſt o animals, being ſometimes, even at preſent, in the Northern ſeas ninety feet in length; formerly, when the captures were leſs frequ and the fiſh had time to grow, it was taken much greater ſize. The whales of the to zone, where they are unmoleſted, are as large a hundred and ſixty feet in length. The wh varies in colour ; the back of ſome being red, belly generally white ; others are black, ſo mottled, and others quite white. The ſubſtan called whale-bone adheres to the upper jaw, a is formed of thin parallel laminæ, denominat whiſkers, ſome of the longeſt being four yards length ; of theſe there are commonly 350 on eac ſide ; but in the very old fiſh more ; and of the only about 500 are of a length fit for uſe, t others being too ſhort. Under the ſkin the whal is covered with fat or blubber, which has yielde from one hundred to three hundred barrels of oi according to the ſize of the fiſh. The Green landers eat the fleſh, which is ſaid to taſte lik coarſe beef.

Whales are taken chiefly in the arctic circle, the vicinity of Nova Zembla, Spitzbergen, l Greenland, where in the ſpace of two months m eighteen hundred to two thouſand fiſh have n caught.

In the year 1775 ſome ſhips were fitted out for Southern whale fiſhery, a branch of commerce ich exhibits, in a very ſtrong and advantage- point of view, the enterpriſing ſpirit, the ple wealth, and the judicious plans of Britiſh rchants. The total value of the cargoes ught home in 1787, amounted to 57,350l. ling. This fiſhery is carried on near the thern coaſt of South America; and ſome ſhips re even doubled Cape Horn, and procured fiſh r the Weſtern coaſt of South America.

Whales are taken by men called harpooners, o ſtrike them with a harping iron, a kind of rded-dart, with a line faſtened to the handle:

> The boat, which on the firſt aſſault did go,
> Struck with a harping iron the younger foe;
> Who, when he felt his ſide ſo rudely goar'd,
> Loud as the ſea that nouriſh'd him he roar'd.
>
> WALLER.

RIDANUS, now called the Po, is a river in ly, which had many fine things ſaid of it by ancient poets, who, finding earth too little contain their fables, have thought Eridanus rthy of a place among the conſtellations. It , according to "the fabling poets' lays," ed in the heavens for receiving Phaeton when was thunderſtruck by Jupiter *. In its vici-

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* See pages 174 and 175.

nity the ſiſters of that raſh youth were m
phoſed into poplars, and their tears into p
amber—

"And trees wept amber on the banks of Po

Poets tell us, that great rivers have
which, twiſted off, become cornucopiæ,
pening pleaſure and plenty; and never,
been remarked, was allegory more nearly
to truth, than in the lines of Virgil, ſo
rately tranſlated by Warton:

Whence bull-fac'd Po*, adorn'd with gilded h
Than whom no river, thro' ſuch level meads,
Down to the ſea in ſwifter torrents ſpeeds.

---

* The term bull-fac'd is given in imitation of the
ſalian river Achelous, that fought with Hercules for De
Many ſtreams, in compliment to this original one, hav
repreſented with horns, on account of their ſerpentine
The fable of the battle of Hercules with Achelous is a ſ
inſtance of the art with which ancient poets disfigur
moſt ſimple events. Achelous was a river of Epirus in G
which by overflowing its banks inundated the adjacent di
Hercules, by conſtructing dykes and cutting canals, co
it within its banks, and thus produced plenty in the co
for this diſtinguiſhed ſervice Œneus, king of Calydon
him his daughter Dejanira in marriage. Achelous w
father of the Sirens.

The Sirens were ſea nymphs, who charmed ſo mucl
their melodious voices, that all forgot their employm
liſten with more attention, and at laſt died for want of

Enticing crocodiles, whoſe tears are death;
Sirens, that murder with enchanting breath.

GRANVI

They were three in number, and are often repreſent
holding a lyre, a ſecond a flute, and the third ſinging.

It is not ſurpriſing that the Po is ſo much ce-
rated by the Roman poets, ſince it is, un-
ſtionably, the fineſt river in Italy,

> “ Where every ſtream in heavenly numbers flows.”

d our own “ phœnix of writers,” at the ſight
this famous ſtream, appears to have been in-
red with a degree of enthuſiaſm :

> Fir'd with a thouſand raptures, I ſurvey
> ERIDANUS thro' flowery meadows ſtray;
> The King of Floods! that rolling o'er their plains,
> The towering Alps of half their moiſture drains,
> And, proudly ſwoln with a whole winter's ſnows,
> Diſtributes wealth and plenty where he flows.
>
> ADDISON.

Notwithſtanding all that the Latin poets, and,
imitation of them, thoſe of other nations, have
ng of the Po, it may, we think, be truly aſ-
ted, that no river has had its matchleſs beau-

ties

---

ally reſided in a ſmall iſland near Cape Pelorum, in Sicily *,
l adjacent to Italy. Ulyſſes paſſed this fatal coaſt with
ety, by ſtopping the ears of his companions with wax, and
lering himſelf to be tied to the maſt of his ſhip, and no
ention paid to his commands, ſhould he wiſh to ſtay to liſten
their ſongs; a moſt ſalutary precaution, for he actually
ade ſigns to his companions to ſtop. This fable may be ap-
ied to all pleaſures in general, which, if too eagerly purſued,
tray the incautious into ruin; while wiſe men, like Ulyſſes,
aking uſe of their reaſon, ſtop their ears againſt their in-
nuations. In popular language, Siren means any miſchievous
ticer: Horace, moraliſing, calls idleneſs a Siren :

> ———Vitanda eſt improba Siren
> Deſidia, Lib. ii. Sat. iii.
> ——— Learn the Siren Idleneſs to ſhun.

[*] See the Siciliæ Antiquæ Tabulæ, in Wilkinſon's Atlas Claſſica.

ties and ineſtimable national importance
pily delineated as our own THAMES, by
Britiſh bards, particularly Denham, Pope,
ſon, and Dyer.

The conſtellation Eridanus is ſometimes
by aſtronomers, Orion's river.

PHŒNIX. This conſtellation was unkno
the old aſtronomers, and is inviſible in our
thern parts. It took its name and form fr
of a bird famous among the ancients; but
rally looked upon by the moderns as fabulo

The naturaliſts ſpeak of this bird as ſing
the only one of its kind: they deſcribe it
the ſize of an eagle; its head finely creſted
a beautiful plumage; its neck covered wi
thers of a gold colour, and the reſt of its
purple, only the tail white, intermixed wit
nation, and its eyes ſparkling like ſtars.
maintain that it lives five or ſix hundred y
the wilderneſs, though by ſome the date
tended to 1461; that, when thus advan
age, it builds itſelf a funeral pile of ſweet
and aromatic gums; this it fires with the w
of its wings, and thus burns itſelf; and fr
aſhes ariſes a worm, which, in time, gro
to be another phœnix *.

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* In alluſion to this circumſtance, an office eſt
in London for inſuring houſes, &c. from fire, has bee
ſtyled "The Phœnix." Equally appropriate is th
"Pelican Office," as applied to an eſtabliſhment for
nefit of *children*, in conſequence of money advanced b
parents.

> The pelican her proper boſom tears,
> And with her blood her numerous offspring rea
>
> Tranſlation of Tanſillo's "Nurſe," by Ro

Other accounts of this extraordinary bird men-
on, that it makes a brilliant appearance, and
dertakes frequent excurſions with a load on its
ck; that when, by having made the experi-
ent through a long tract of air, it gains ſufficient
nfidence in its own vigour, it takes up the body
its father, and flies with it to the altar of the
n, to be there conſumed. From this laſt ſtate-
ent it appears probable, that the learned, eſpe-
ally of Egypt, enveloped under this allegory
e philoſophy of comets, and that the phœnix
as an Egyptian hieroglyphical repreſentation of
e comet.

Ancient writers reckon four traditional appear-
nces of the phœnix: the firſt in the reign of Se-
ſtris; the ſecond in that of Amaſis; the third
that of the third Ptolemy; and the fourth, ac-
rding to Dion Caſſius, as a preſage of the death
f Tiberius; but Tacitus refers it to Egypt under
he empire of Tiberius, and Pliny to the con-
ulate of Quintus Plancius, which took place
. D. 36.

The ancients, however, in general, ſpeak of he phœnix as a fabulous being.

The early Chriſtians refer to the phœnix in ome of their accounts of the reſurrection, of which, indeed, it ſeems an appropriate emblem.

The Phœnicians gave the name of phœnix to the palm-tree; becauſe, when burnt down to the very root, it naturally riſes again fairer than ever.

Toucan, or Anſer Americanus. This is a modern conſtellation.

The toucan in ornithology is a genus of birds, of which Linnæus enumerates eight ſpecies, moſt of which are inhabitants of South America.

end ; it has an enormous bill, n
half in length, and, in its thic
two in breadth. This bird is, ho
to be ſingularly beautiful. It is ſa
on pepper ; and Thevet affirms,
it greedily, and returns it again
geſted, and that the natives gath
per, and uſe it in their food,
acrid than the freſh pepper, and
its noxious qualities.

There is no bird that ſecures i
from external injury than the tou
only birds, men, and ſerpents to g
a numerous tribe of monkeys, ſt
miſchievous, and hungry, than al
toucan, however, ſcoops out its n
of ſome tree, leaving only an
enough for its ingreſs and egreſs.
with its great beak, guarding th
if the monkey ventures to offer a
the toucan gives him ſuch an un
tion, that he is ſoon obliged to ma
retreat.

lue to their cheeks, and this they conſider as an reſiſtible addition to their beauty.

Orion. The name of this brilliant conſtella-ion is formed from a Greek word importing "to ring water;" the ancients ſuppoſing that its riſing redicted rain and tempeſtuous weather. Ana-reon ſtyles Orion "*ſdius*;" Virgil applies to im the epithets "*aquoſus*," and "*nimboſus*;" nd Horace calls him "*infeſtus*—

"*Dum pecori lupus, et nautis infeſtus Orion.*"

"As long as wolves purſue the fearful ſheep,
"And ſtern Orion rages o'er the deep."

imilar qualities are aſcribed to him by modern oets. Pope, for inſtance, remarks that

Orion ſheds *unwholeſome* dews.

As this conſtellation is compoſed of ſtars in he form of a man holding a ſword, the ancient oets often ſpeak of Orion's ſword and girdle.

Orion, in fabulous hiſtory, was the ſon of Jupiter, Neptune, and Mercury; for, as these gods were viſiting the earth, they entered the houſe of Hyricus, a native of Tanagra, in Bœotia, under the character of benighted travellers. The good old peaſant not only received them with the greateſt hoſpitality, but killed his only remaining ox for their entertainment. This generoſity ſo pleaſed the celeſtial gueſts, that they offered their hoſt whatever he ſhould deſire. Being childleſs, and having lately loſt his wife, to whom he had promiſed on her death-bed never to marry again, his requeſt was to have a ſon without another marriage: it was granted, and the gods produced

Orion from the ſkin of the identical animal had been ſo liberally ſlain for their repaſt.

Orion in his adoleſcence rendered hi conſpicuous, that Diana not only retain among her attendants, but even became enamoured of him. Aurora, whom Ven inſpired with love, conveyed him into the of Delos, one of the Cyclades, to enjoy his pany with greater ſecurity; but Diana, in of jealouſy, deſtroyed him with her ar though ſome aſcribe her reſentment to cauſes. Relenting, however, afterwards, the fended goddeſs prevailed on Jupiter to raiſe deceaſed favourite to the ſkies, where he continues to form one of its moſt beautiful ſtellations.

> Bright Orion arm'd with burniſh'd gold.
>
> DRYDEN'S VIRGI

> Him who admires not, to the ſtars is blind.
>
> EUDOSI

Diodorus ſays, that Orion was a celebrat hunter, ſuperior to the reſt of mankind by h ſtrength and uncommon ſtature; an opinion whi is countenanced by Virgil in the following lines:

> There tow'ring in the midmoſt ranks he ſtood,
> Like tall Orion ſtalking o'er the flood,
> When with his brawny breaſt he cuts the waves,
> His ſhoulders ſcarce the topmoſt billow laves.
>
> DRYDE

He built the port of Zancle *, in the N. E. pa of Sicily, and fortified the coaſt of that iſlan

---

* Afterwards called Meſſana: it is near Pelorum. S Italia Antiqua, in Wilkinſon's Atlas Claſſica.

again

ſt the frequent inundations of the ſea, by ng a mound of earth called Pelorum, on which ilt a temple to the gods of the ſea.

ion was buried in the iſland of Delos; and nonument which the people of Tanagra d, as containing his remains, was nothing cenotaph.

ne ſuppoſe Orion to have been a diſciple of , and to have firſt inſtructed the Greeks in ovements of the celeſtial bodies; for which n, they ſubjoin, he received the poſthumous ir of a place among the conſtellations. s report, that he was an excellent workman on, and that he fabricated a ſubterranean e for Vulcan *.

MONOCEROS.

Vulcan was a god of the ancients, who preſided over nd the patron of all artiſts who worked in iron and s. Being kicked down from heaven by his father Jupiter, in the iſland of Lemnos in the Archipelago, where he himſelf a palace, and raiſed forges to work metals; he is ſtyled by Virgil and others the "Lemnian god."

> The god of manual arts
> Forg'd at Lemnos miſſile darts,
> Darts of ſteel for Cupid's bow,
> Source of joy, and ſource of woe.
>
> ANACREON.

e Cyclops of Sicily were his miniſters and attendants, with him they fabricated not only the thunderbolts of r, but alſo arms for the gods and the moſt celebrated s. His forges were ſuppoſed to be under mount Ætna:

> Sacred to Vulcan's name an iſle there lay,
> Betwixt Sicilia's coaſts and Lipare,
> Rais'd high on ſmoking rocks, and deep below,
> In hollow caves, the fires of Ætna glow.

Monoceros, the Unicorn. This
tion was formed by Hevelius.

The unicorn, in natural hiſtory, is
famous among the ancients. It takes
from its diſtinguiſhing characteriſtic, that
ing only one horn. It is of the ſame
the rhinoceros.

Various and diſcordant are the accoun
by different writers of this celebrated
animal. Some ſay that it reſembles a horſe,
an aſs, others a goat, by its beard; others
phant, others a rhinoceros, others a grey
&c. Munſter and Thevet will have it an
bious animal, and its horn to be move
pleaſure. Others make all its ſtrength
in its horn; and add, that when purſued
hunters, it precipitates itſelf from the tops
higheſt rocks, and pitches upon its horn;
ſuſtains the whole force of its fall, ſo

The Cyclops here their heavy hammers deal;
Loud ſtrokes and hiſſings of tormented ſteel
Are heard around; the boiling waters roar,
And ſmoky flames through fumy tunnels ſoar.

Dryden's V

Vulcan is ſometimes repreſented as covered wit
blowing with his nervous arms the fires of his forges,
forehead blackened with ſmoke: at other times he i
deformed and lame (having broken his leg in his fa
heaven) holding a hammer raiſed in the air ready to
while with the other hand he turns with pincers a thu
on his anvil. He was the huſband of Venus, who
repreſented by the poets as laughing at his deformit
mimicking his lameneſs, to gain the ſmiles of her adn

Vulcan with awkward grace his office plies,
And unextinguiſh'd laughter ſhakes the ſkies.

Pope's H

s no damage thereby. In reality, the ſe-
uthors do all give different accounts of the
and colour both of the animal and of its
and all its parts. And hence many among
derns have ſuppoſed it to be a merely fa-
animal. Sparmann, however, informs us,
e figure of the unicorn deſcribed by ſome
ancients has been found delineated by the
Hottentots on the plain ſurface of a rock
fraria ; and therefore conjectures, that ſuch
nal either does exiſt at preſent in the internal
of Africa, or at leaſt once did ſo. Father
affirms that he has ſeen it.

at ordinarily paſſes among us for the unicorn's
and is ſhewn for ſuch in collections of cu-
es, is only the tooth of a large fiſh of the
kind, frequent in the icy ſea.

e rhinoceros, mentioned above, is, accord-
o Bontius, equal to the elephant in the bulk
s body, though it is lower on account of
ortneſs of its legs. It inhabits Bengal, Siam,
in-China, part of China, and the iſles of
and Sumatra.

is animal is the UNICORN of Scripture, and
ndian aſs of Ariſtotle, who ſays it has but
horn.

he rhinoceros with two horns inhabits Africa
, whence the Romans had theirs, which are,
efore, always repreſented on their coins, &c.
icorns.

PUS, Avis Indica. This conſtellation, which
laced near the South pole, is ſuppoſed to re-
ent the bird of paradiſe. The apus is ima-
ed to be one of thoſe birds called apodes, as
ing no feet. In ornithology it is a ſpecies of
ſwallow.

now well known to be a bird o
on ſmall birds, building in the wo
ing upon trees like the other fe
moſt of thoſe now brought into
killed while ſitting.

There are ſeveral ſpecies of this
Ray has reckoned eleven, and ot
tioned more, which were unknown
but it is conjectured that ſome
rather the varieties of age and
ſpecies.

The diſtinguiſhing characters
paradiſe are, their having two ſ
tremely long feathers, the uſe o
well known, as they are neither
wings nor rump. Theſe birds ar
Molucca Iſlands, Amboyna, and
Iſlands.

CANIS MAJOR, the Great Dog
and Canis Minor are ſaid to ha
hounds; but ſome writers of
tell us, that the ſagacious dog
covered to Erigone the burial pla

ed kind, amounting to no leſs than fourteen xteen diſtinct ſpecies.

hen civilized and accuſtomed to live with the dog is poſſeſſed of every amiable quality. eems to have no other deſire than to pleaſe protect his maſter. He is gentle, obedient, ſſive, and faithful; he exhibits on all occa-

Attachment never to be wean'd or chang'd
By any change of fortune, proof alike
Againſt unkindneſs, abſence, and neglect;
Fidelity, that neither bribe nor threat
Can move or warp; and gratitude for ſmall
And trivial favours, laſting as the life,
And gliſt'ning even in the dying eye.

COWPER.

Theſe diſpoſitions, joined to his almoſt un- nded ſagacity, juſtly claim the eſteem of man- ind. Accordingly, no animal is ſo much careſſed r reſpected; and, being endowed with ſuch un- mmon qualities, he anſwers many uſeful pur- oſes. His fidelity and vigilance are daily em- loyed to protect our perſons, our flocks, or our oods; and the acuteneſs of his ſmell gains him mployment in hunting: theſe valuable qualities are all noticed by Virgil:

Nor laſt forget thy faithful dogs, but feed
With fatt'ning whey the maſtiff's gen'rous breed;
And Spartan race, who, for the fold's relief,
Will proſecute with cries the nightly thief:
Repulſe the prowling wolf, and hold at bay
The mountain robbers, ruſhing to the prey.
With cries of hounds thou may'ſt purſue the fear
Of flying hares, and chaſe the fallow deer;
Rouſe from their deſert dens the briſtled rage
Of boars, and beamy ſtags in toils engage.

DRYDEN.

make uſe of the ſkins of theſe anima
and the long hair for ornament.
landers too make uſe of dogs as a
horſes. They faſten from four to
their ſledges, and thus make their
ſtate, or bring home the animals w
killed. Egede ſays, that they w
the ice fifteen German or ſixty E
a day, with ſledges loaden with th
five or ſix large ſeals.

Some nations are fond of dogs
reckon a fat one a great delica
Aſiatic and American ſavages uſe d
to their gods, to beſpeak favour o

In times of ancient ſimplicity d
as the attendants and guards of h
repreſents Telemachus as ſo attende

> " Two dogs, a faithful guard, at

Again, the family of Patroclus had

> " Nine large dogs domeſtic at his

is faithful even unto death, as no diſ-
nduce him to forſake his benefactor.

, a comic poet of Athens, who flou-
ut 435 years before the Chriſtian æra,
ſo attached to him, that at his death
refuſed all aliment, and ſtarved him-
tomb. A ſimilar event took place on
of Daphnis, a ſhepherd of Sicily, on
iſe five of his dogs rejected all ſuſte-
d pined themſelves to death.

William the Firſt, Prince of Orange,
aſſaſſinated by a hired emiſſary of that
onſter Philip the Second, king of Spain,
nging to the deceaſed patron of liberty
rief for the loſs of his beloved maſter.
is commemorated in a church at Delft,
d, where the remains of this great
re interred, and a magnificent mauſo-
ted to his memory. At his feet lies the
the faithful creature above mentioned,
ſſion of whoſe countenance, ſays a mo-
eller, cannot be too much admired;—
d ſtern grief could not be better repre-
The whole monument is generally allowed
uted in a maſterly ſtyle.

h, in his life of Themiſtocles, mentions
longing to Xanthippus, the father of
which, when the Athenians were obliged
n their city on the approaches of Xerxes'
lowed his maſter acroſs the ſea to the
alamin, where he landed quite exhauſted,
ed the moment after upon the ſhore.
ure was honoured with a tomb by the
, who gave the name of the Dog's
that part of the iſland where he was

Homer's account of Ulyſſes' d
highly intereſting and pathetic. H
at Ithaca when he embarked for Tr
him at his return, after an abſen
years.

When wiſe Ulyſſes, from his native c
Long kept by wars, and long by tempe
Arriv'd at laſt, poor, old, diſguis'd,
To all his friends, and ev'n his queen,
Chang'd as he was, with age, and toils,
Furrow'd his rev'rend face, and white
In his own palace forc'd to aſk his brea
Scorn'd by thoſe ſlaves his former boun
Forgot of all his own domeſtic crew;
The faithful dog alone his rightful maſt
Unfed, unhous'd, neglected, on the cl
Like an old ſervant now caſhier'd, he
Touch'd with reſentment of ungrateful
And longing to behold his ancient lord
Him when he ſaw—he roſe and crawl'
('Twas all he cou'd) and fawn'd and kiſ
Seiz'd with dumb joy—then falling by
Own'd his returning lord, look'd up,

Another affecting inſtance of this
mal's attachment to the human race,
the preſent article. When the miſera
Lazarus lay at the rich man's gate,
all ulcer, periſhing for hunger, im
imploring in vain, to be fed with
which fell from the table of unfeelin
thoughtleſs profuſion; the pangs of
ſharpened to him by the ſight and
riotous waſte; to which may be add
terneſs of dying neglected and unpiti
conſolation in this loweſt depth of hu

n, was derived from one of theſe affectionate ures—*a dog came and licked his ſores.*

DRA. This conſtellation conſiſts of a num- f ſtars, imagined to repreſent a water ſerpent, according to poetic fable, is the one deſtroyed ercules.

e hydra of Lerna, in mythology, was a ter- monſter which is ſometimes repreſented as a nt, branched out into ſeveral other ſerpents, ometimes with a human head, bearing ſer- inſtead of hair; and the fabuliſts add, that one of theſe heads was cut off, a double one ted in its place.

is generally ſuppoſed, that this hydra was a multitude of ſerpents that infeſted the hes of Lerna, near Argos, in Greece, and h ſeemed to increaſe as faſt as they were oyed. Theſe Hercules entirely extirpated by ng fire to the reeds in which they lodged.

XTANS URANIÆ. The Sextant of Urania, of the Muſes *. This conſtellation was formed evelius out of unformed ſtars.

ſextant, in mathematics, denotes the ſixth of a circle, or an arch comprehending ſixty ees. But this word is more particularly uſed enote an aſtronomical inſtrument, whoſe uſe he ſame as that of the quadrant, namely, ke obſervations of the ſun, planets, or fixed . A quadrant contains 90 degrees. In the rvatories of Greenwich and Pekin there are large and beautiful ſextants.

RATER, the Cup. This conſtellation is by ſaid to be the generous heart-expanding bowl acchus.

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* See page 138.

A cup is a ſmall veſſel of various
terials, chiefly to drink from. A
common pepper-corn by Oſwald Ne
man, is ſaid to have held 1200 oth
having each its ſeveral handle, al
edges, with room for 400 more.
and the Ency. Brit. Art. Cup.

Myrmecides is mentioned by
writers for his ſingular ſkill in
images of marble or ivory; for i
riage ſo ſmall, that it was covered
of a fly, together with its driver.
ſcopic artiſt was a native of Mil
Adams's Claſſical Biography.

Corvus, the Raven, or Crow,
to be the crow into which Apollo
himſelf when he eſcaped from the
giant Typhæus. See p. 113, 114.

The corvus, in ornithology,
birds of which the different ſpeci
than nineteen.

The raven of Engliſh authors is
bird, and may be trained up to
hawks *; to fetch and carry lik
ſpeak like parrots †; to imitate th

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* Scaliger tells us, that he ſaw a cro
king's court, that was taught to fly at partri
fowl, from the falconer's hand; they have a
as letter-carriers. See Arith. Queſt. Art.

† When the ſovereignty of the world was
Cæſar and Anthony, a poor man at Rome
and taught them to pronounce, in their pr
ſalutation to the emperor: and, that he
againſt all events, one of them ſaluted Cæ
Anthony. When Auguſtus was returning
this man, with the crow in his hand met hi

t has alſo a conſiderable portion of nd has given many inſtances of kind- chment to other animals, particularly ogs †.

is particularly mentioned by Job ii. ver. 41.) as an object of the care e ‡:

'd with hunger, the wild raven's brood
God, importunate for food;
eir cry; he grants their hoarſe requeſt,
he clamour of the craving neſt.

YOUNG.

ravens that Elijah was miraculouſly is abode near the brook Cherith. See i. 4, 5, 6.

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agreeable flattery, to which Auguſtus was not e ſaluted by a crow with the acclamations of ewarded the novel adulator munificently. The e man, however, having in vain eſſayed to teach nage to two crows that he had deſtined for this with envy at his happier fate, revealed to this man had another crow at his houſe, which d to have ſaluted Anthony, had fortune favoured is malicious intelligence intercepted the bounty

CURIOSITIES OF LITERATURE.

Gaul of gigantic ſtature challenged any one of an army to fight him, VALERIUS, a young ionary tribune, having firſt aſked the conſul's t againſt him, and killed him, by the aſſiſtance it is ſaid, which perching on the helmet of k the Gaul in the face with his beak and claws, fell, flew out of ſight towards the Eaſt. Hence, lerius was ſirnamed CORVUS, and his poſ- ri.

Gent. Mag. for March 1788; or the Ency. le.

Pſalm cxlvii. 9. and Luke xii. 24.

Theſe birds uſually frequent the neighbo of large towns, where they are extremely in devouring the carcaſes and filth which otherwiſe prove a great nuiſance. Their are alſo of great importance to muſical inſtr makers; and in Italy their fleſh is eaten. Mr. mentions his breakfaſting on ſome broiled c at Viterbo about 30 miles N. of Rome *.

CENTAURUS, the Centaur. This is a pa moiety of a conſtellation, in form of half half-horſe; uſually joined with the wolf. appellation comes from two Greek words noting bull-pricker.

Centaurs, in mythology, were a kind of f lous monſters, half men and half horſes. fable is differently interpreted: ſome ſuppoſ centaurs to have been a body of ſhepherds herdſmen, rich in cattle, who inhabited the m tains of Arcadia, and to whom is attributed invention of paſtoral poetry. Others ſay, under the reign of Ixion, king of Theſſal herd of bulls ran mad, and ravaged the w country, rendering the mountains inacceſſi that ſome young men who had found the a taming and mounting horſes, undertook to e theſe obnoxious animals, which they pur on horſeback, and thence obtained the app tion of *Centaurs*. This ſucceſs rendering t inſolent, they inſulted the Lapithæ, a peopl Theſſaly; and becauſe when attacked they with great rapidity, it was ſuppoſed that they v half horſes and half men; men on horſeback be at that period a very uncommon ſight, and pearing, eſpecially at a diſtance, only one b e creature: ſo the Spaniſh cavalry at firſt to the Mexicans *. The centaurs, in were a tribe of Lapithæ, who reſided Iount Pelion, and firſt invented the art of ıg horſes, as intimated by Virgil:

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* Maſon's edit. of Gray's Poems, vol. ii. p. 111.

e Lapithæ to chariots add the ſtate
bits and bridles: taught the ſteed to bound;
turn the ring, and trace the mazy ground;
ſtop, to fly, the rules of war to know;
obey the rider, and to dare the foe.

DRYDEN.

us, the wolf. This conſtellation, as we emarked in the preceding article, is united centaur.

wolf, in zoology, is a beaſt of prey of the ind, and the largeſt and fierceſt of that race mals. The ancients had an opinion, that eck of the wolf was all of one ſolid bone; n the contrary, this creature is able to turn viſt it about with a very quick motion.

: wolf, cruel, but cowardly and ſuſpicious, om man; and ſeldom ventures out of the except preſſed by hunger: but when this es extreme, he braves danger, and will : men, horſes, dogs, and cattle of all kinds;

When the Spaniards landed in that country, the horſes bjects of the greateſt aſtoniſhment to the people of New At firſt they imagined the horſe and his rider, like ıtaurs of the ancients, to be ſome monſtrous animal ot ole form; and ſuppoſing, that their food was the ſame t of men, brought fleſh and bread to nouriſh them. ıfter they diſcovered their miſtake, they believed the devoured men in battle, and when they neighed, thought ıey were demanding their prey. It was not the intereſt Spaniards to undeceive them. Robertſon's Hiſtory of ca, 4to. edit. 1777, vol. ii. p. 451.

even the graves of the dead are not proof
his rapacity. Theſe circumſtances are fin
ſribed in the following lines :

By wint'ry famine rous'd,
Cruel as death, and hungry as the grave!
Burning for blood! bony, and gaunt, and gri
Aſſembling wolves in raging troops deſcend ;
And, pouring o'er the country, bear along,
Keen as the North wind ſweeps the gloſſy ſno
All is their prize. They faſten on the ſteed,
Preſs him to earth, and pierce his mighty hear
Nor can the bull his awful front defend,
Or ſhake the murthering ſavages away.
Rapacious, at the mother's throat they fly,
And tear the ſcreaming infant from her breaſt.
The god-like face of man avails him nought.
Even beauty, force divine! at whoſe bright g
The generous lion ſtands in ſoften'd gaze,
Here bleeds, a hapleſs undiſtinguiſh'd prey.
But if, appris'd of the ſevere attack,
The country be ſhut up, lur'd by the ſcent,
On church-yards drear (inhuman to relate!)
The diſappointed prowlers fall, and dig
The ſhrouded body from the grave ; o'er whic
Mix'd with foul ſhades and frighted ghoſts, the
THO

As juſtice, however, ſhould be done even
moſt noxious animals, we cannot conclude th
ject without informing ſuch of our young r
as are unacquainted with the following ſtory

" Wolves and bears they ſay,
" Caſting their ſavageneſs aſide, have done
" Kind offices of pity." SHAKESP

When Romulus and Remus, the grandſ
Numitor, king of Alba, was precipitated

river Tyber, by order of Amulius, who had rped the crown, they are ſaid to have been ſerved by a ſhe-wolf, which ſuckled them with milk, till they were found by Fauſtulus, one the king's ſhepherds, who educated them as own children. They afterwards ſlew Amulius, ored Numitor to his throne, and laid the foun- on of Rome :

When Rome's great founder, as they ſay,
An hapleſs infant moaning lay,
Dragg'd from the mother's foſt'ring care,
He fill'd with piteous cries the air.
A ſhe-wolf then her care ſupply'd,
And all her fierceneſs laid aſide:
The tender babe ſhe fondly ſtrove
To foſter with the kindeſt love *.

FUGITIVE FABLES.

The wolf inhabits the continents of Europe, a, Africa, and America. In 1281, theſe ani- ls infeſted ſeveral Engliſh counties, but after t period our records make no mention of them. e laſt wolf known in Scotland was killed in 0, and in Ireland one was deſtroyed in 1710.

ARA, the Altar. This is ſaid to be the altar ich was ſworn on by the gods previous to their nbat with the earth-born giants.

Altar is a place or pile whereon to offer ſacrifice ſome deity. They differed in figure and ma- ials. Some were round, others ſquare, and ers triangular. The heathens at firſt made

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Pierino, a celebrated Tuſcan painter, contemporary with hael, was, it is ſaid, nurſed by a ſhe-goat; and two of llo's children by the nymph Acacalis, being expoſed to wild beaſts of Crete, were, according to the fabuliſts, pre- ed by a goat giving them her milk.

theirs only of turf; afterwards of ſtone, t
wood, marble, &c.

Before temples were in uſe, altars were
ſometimes in groves, ſometimes in the hig
and ſometimes on the tops of mountains;
was a cuſtom to engrave upon them the
enſign, or character of the deity to whor
were conſecrated.

In the great temples of ancient Rome
were ordinarily three altars. The ancients
upon and by their altars on ſolemn occaſ
They alſo ſerved as places of refuge to all
who fled to them, whatever crime they had
mitted.

Altars are doubtleſs as ancient as ſacrifices
ſelves; conſequently their origin is not
later than that of the world, Gen. ch. iv.
aſcribe their origin to the Egyptians; oth
the Jews; others to the patriarchs befo
Flood. Some carry them as far back as
whoſe altar is much ſpoken of by Jewi
even Chriſtian writers. Others are conten
make the patriarch Enoch the firſt who conſe
a public altar. Be this as it may, the
altars of which we find any expreſs teſtimon
thoſe erected by Abraham.

---

* The renowned Carthaginian general, Hanni
brought at nine years of age to an altar, by hi
Amilcar, to ſwear eternal enmity to the Romans:

Sworn from his cradle Rome's relentleſs foe,
A gen'rous hate the Punic champion bore;
Thy lake, O Thraſimene! beheld it glow,
And Cannæ's walls, and Trebia's crimſon ſho

SHEN

† See Arith. Queſt. Art. Punic Wars, and Hannibal's March

The principal altars of the Jews were, the altar incenſe, that of burnt-offering, and the altar table for the ſhew-bread.

Altar is uſed among ſome claſſes of Chriſtians the communion-table, which is placed on the tern ſide of a church, and ſet apart for the bration of the euchariſt.

Her Grace roſe, and with modeſt paces,
ne to the altar, where ſhe kneel'd, and, ſaint-like,
l her fair eyes to heav'n, and pray'd devoutly.

SHAKESPEARE.

PAVO, the Peacock. This conſtellation was known to the ancients, and is not viſible in our itude.

Peacock, in ornithology, is a genus of birds, which Latham, in his Synopſis, enumerates ght ſpecies.

This beautiful bird, now ſo common in Europe, of Eaſtern origin, being a native of India. hey are found wild in the iſlands of Ceylon and va, in the Eaſt-Indies; at St. Helena, in the tlantic Ocean; at Barbuda and other Weſt-dia Iſlands. They are not natural to China; it they are found in many places of Aſia and frica. They are, however, no where ſo large ſo fine as in India, in the vicinity of the river anges, whence, by degrees, they have ſpread to all parts, increaſing in a wild ſtate in the armer climates; but requiring care in the colder gions.

A fowl ſo eminent for the beauty of his feathers the peacock, could not long remain a ſtranger the more diſtant parts in which they were pro-ced; for ſo early as the days of Solomon, we find

32l. ſterling. Thence they are ſupp
been conveyed to Samos, an iſland i
pelago, where they were preſerve
Temple of Juno, being the birds ſa
goddeſs; and ſome of the ancients c
excellency of the Samian peacocks. I
that they were brought there origi
purpoſes of ſuperſtition, and afterwa
for the uſes of luxury. It is alſo a
when Alexander was in India, h
numbers of wild ones on the bank
draotes, and was ſo ſtruck with the
to appoint a ſevere puniſhment on an
killed them. Indeed, the exquiſite
the peacock, particularly the ſtrik
its tail (which poetic fiction aſcribes
of Argus * having been placed there
been the ſubject of general admiratio

rich the peacock! what bright glories run
plume to plume, and vary in the ſun!
roudly ſpreads them to the golden ray,
s all his colours, and adorns the day;
conſcious ſtate the ſpacious round diſplays,
ſlowly moves amid the waving blaze.

YOUNG.

The peacock ſpreads
very-colour'd glory to the ſun,
ſwims in radiant majeſty along.

THOMSON.

oſt ages peacocks have been eſteemed as a y food. A Roman named Hortenſius (not ebrated orator) was the firſt who intro- the eating of them at Rome, which oc- at a feaſt that he gave when he was created *. The brains of this bird were among the s of the gluttonous emperor Vitellius †.

GRUS,

---

re and then ſlew him. Juno, to recompenſe Argus, him into a peacock, or, as others report, imprinted pon the plumage of this bird, which was conſecrated nd is often ſtyled "the bird of Juno." See Juno,

: augurs were miniſters of religion among the Romans, l to take auguries or preſages concerning futurity from aſts, and the appearances of the heavens.

What ſay the augurs?
hey would not have you to ſtir forth to-day;
lucking the entrails of an offering forth,
hey could not find a heart within the beaſt.

SHAKESPEARE.

was a college or community of augurs conſiſting of three members, then of four: afterwards the

: Arith. Queſt.

out firſt conſulting them ; and their advice,
was, by a decree of the ſenate, appointed
religiouſly obſerved.

The term augury, in its proper ſenſe,
foretelling future events by obſervations ta
tering, ſinging, and flight of birds ; thoug
writers in a more general ſignification, as
different kinds of divination. Augury w
ſuperſtition. We learn from Heſiod, that
part regulated by the coming or going of bi
bably it had been in uſe long before his t
was then in its infancy. In proceſs of ti
ſeem to have gained a greater and very w
till at laſt no affair of conſequence, either
concern, was undertaken without conſul
were looked upon as the interpreters of t
who were qualified to underſtand their oracl
the chief men in the Greek and Roman ſt
ſoever ſuch an inſtitution as a college of au
our eyes, yet, like all other extravagant in
part its origin from nature. When men c
derful migration of birds, how they diſap
appeared again at ſtated times, and could gi
they went, it was almoſt natural to ſuppoſe
ſomewhere out of the ſphere of this earth

acteriſtic of this genus is, that the head
l, and almoſt bare of feathers. Theſe
very tall, and remarkable for the length
legs and neck, of which there are three
pecies, namely, the common crane, the
ane, and the Majorca crane. The firſt
is a very common bird in Italy and
aces, particularly throughout Northern
nd Aſia. In winter they inhabit the
regions, ſuch as Egypt, Aleppo, India,
&c.

---

tals, are derived from us; firſt, we ſhow you the
viz. Spring, Summer, Autumn, Winter. The crane
it the time for ſowing, when ſhe flies with her warn-
into Egypt; ſhe bids the ſailor hang up his rudder
e his reſt, and every prudent man provide himſelf
ter garments. Next the kite appearing, proclaims
ſeaſon, viz. when it is time to ſhear his ſheep.
at the ſwallow informs you when to put on ſummer
" Pope has amplified this idea in the following

an from Nature riſing ſlow to art!
py inſtinct then was reaſon's part;
then to man the voice of Nature ſpake—
, from the creatures thy inſtructions take:
arn from the birds what food the thickets yield;
arn from the beaſts the phyſic of the field;
y arts of building from the bee receive;
arn of the mole to plough, the worm to weave;
arn of the little nautilus to ſail,
read the thin oar, and catch the driving gale."

ESSAY ON MAN.

thus, in all probability, that man, by copying,
or improving the works of inſtinct, at firſt learned
the moſt uſeful arts of life. We may alſo ſubjoin,
of the moſt ſtriking leſſons of morality to man are
m the animal creation, as exemplified in ſeveral of
gant fables which have been given to the world by

The

found during the winter in large flocks
ſhire and Cambridgeſhire: but at preſ
habitants of thoſe counties are ſcarcely
with them; ſo that theſe birds ſeem n
forſaken our iſland.

The migration of birds is one of
curious phænomena in nature, and illuſ
manner peculiarly ſtriking, the power o
It is remarked by Jeremiah, chap. vi
Yea, the ſtork in the heaven knoweth he
times, and the turtle, and the crane,
ſwallow, obſerve the time of their com

The nautilus is thus deſcribed by an ancient
ſwim on the ſurface of the ſea, on the back of
which exactly reſemble the hulk of a ſhip; th
feet like maſts, and extend a membrane bet
ſerves as a ſail: the other two feet they employ
ſide. They are uſually ſeen in the Mediterranea

* Inſtinct is deſire or averſion acting in the
the intervention of reaſon or deliberation; the
termining the will of brutes:

ticed by the beſt ancient and modern

Vhen inclement winters vex the plain
piercing froſts, or thick-deſcending rain,
rmer ſeas the cranes embody'd fly,
noiſe, and order, thro' the mid-way ſky.

POPE's HOMER.

at the ſignal giv'n, the cranes ariſe
: the ſtormy South, and blacken all the ſkies.

DRYDEN's VIRGIL.

tribes of birds which migrate, either in
f food, or of warmer climes, are various;
fore their flight, they collect together in
ing crowds a conſiderable time previous to
al departure.

tork-aſſembly meets; for many a day,
lting deep, and various, ere they take
arduous voyage thro' the liquid ſky.
ow their route deſign'd, their leaders choſe,
tribes adjuſted, clean'd their vigorous wings;
nany a circle, many a ſhort eſſay,
l'd round and round, in congregation full
gur'd flight aſcends; and, riding high
erial billows, mixes with the clouds.

THOMSON.

light of migratory birds to diſtant coun-
acroſs immenſe oceans, is performed with
ful and unerring exactneſs. Cranes gene-
nge themſelves in a long column like an I,
o lines united in a point like a V reverſed:
s Milton ſays,

—Rang'd in figure wedge their way.

The bird which forms the point, cuts the and facilitates a paſſage to thoſe that follow he is charged with this commiſſion only for tain time, at the expiration of which he w into the rear and another takes his poſt: thu the ſame poet obſerves,

——With mutual wing
Eaſing their flight; ſo ſteers the prudent crane
Her annual voyage, borne on the winds.

In theſe migrations they frequently fly ſo as not to be viſible; their paſſing being known by the noiſe they make, which is lo than that of any other bird.

It is ſuppoſed by many, that the crane eats but this is an error; the ſtructure of the ſtom plainly ſhows it to be a granivorous bird; and fleſh is very delicate, and much valued in the Ital markets. The whole of the crane, except feathers, is uſed in medicine. An ophthal ointment is prepared from the marrow of its le

Lepus, the Hare. The hare is a ſmall quad ped, with long ears and ſhort tail, that mo by leaps, remarkable for timidity, vigilance, fecundity; the common game of hunters:

Poor is the triumph o'er the timid hare.
Thomso

Mr. Young, whom we have before quot (ſee page 185), maintains that hunting for *ſp* is unlawful and ſinful; man never having received any ſcriptural grant to take away the live of animals for his diverſion. Before we commence the operations of this cruel ſport, let us, continues this humane author, compare in our minds ent ſtate of the deſtined victims which we are about to reduce to ſee

le mix'd animal creation round
l happy,"——

xpreſſing the different pleaſures and hich are proper to their ſeveral nvey to the cultivated and feeling far more exquiſite than any which ous game of death" is capable of

———Deteſted ſport,
its pleaſure to another's pain;
upon the ſobs and dying ſhrieks
ſs nature, dumb, but yet endued
uence, that agonies inſpire,
ears and heart-diſtending ſighs!
, alas! and ſighs, that never find
onding tone in jovial ſouls!

COWPER.

, in his exquiſite comedy of "As ," has given the following admi-ting deſcription of a wounded ſtag:

hed animal heav'd forth ſuch groans,
diſcharge did ſtretch his leathern coat
burſting: and the big round tears
ne another down his innocent noſe
caſe.

ſhews a more tender and feeling heart f this nature than Thomſon; in his ave a deſcription of a hunted ſtag, eſerves to be put in competition with reat bard's. We ſhall tranſcribe the nes:

He

The ſame benevolent writer
abhorrence of this ſanguinary d
lowing indignant and appropria

With the gleam
The beaſts of prey retire, that all
Urg'd by neceſſity had rang'd the
As if their conſcious ravage ſhun
Aſham'd. Not ſo the ſteady tyr
Who, with the thoughtleſs inſol
Inflam'd, beyond the moſt infuri
Of the worſt monſter that e'er ro
For ſport alone purſues the cruel
Amid the beamings of the gentle
Upbraid, ye ravening tribes, our
For hunger kindles you, and law
But laviſh fed, in Nature's boun
To joy at anguiſh, and delight in
Is what your horrid boſoms never

The hare lives on vegetables

See Dr. Mavor's Collection of Voyages
els*, vol. xii. page 166.
r of hares is a very conſiderable article
at manufacture, and many thouſands of
are annually imported for that uſe from
l Siberia.
MBA NOACHI. This conſtellation, "of
tranquil peace the ſign," was ſo named
morate Noah's meſſenger,

OVE, ſent forth once and again to ſpy
ree or ground whereon his foot may light;
ond time returning, in his bill
e leaf he brings, pacific ſign†.

MILTON.

ba, or pigeon, in the Linnæan ſyſtem of
gy, is a diſtinct genus of birds, of which
ous writer enumerates forty ſpecies. The
geon, and all its beautiful and elegant
, derive their origin from one ſpecies,
-dove.

---

luable work, the peruſal of which has afforded us
leaſure, that, adopting the words of a reſpectable
e earneſtly recommend it to the particular attention
ng friends:
ſteem this collection a ſeaſonable, acceptable, and
erformance, particularly adapted for the aſſiſtance
rmation of youth;—though by no means confined
juvenile claſs; ſince perſons of every age may con-
peruſe it to great advantage and entertainment.
mpilement is embelliſhed with a variety of en-
." Monthly Review, vol. xxvi. page 348.
ne of Britiſh Biography, entitled the "Britiſh
"-and another of "Natural Hiſtory," admirably
for the improvement of youth in thoſe delightful
ve been recently publiſhed by this elegant writer.
ug. 2, 1704, Chron. Tab.

Gen. viii. 10, 11.

The

is remarkable for the accuracy witl
turns to the ſpot from whence it
One of theſe birds, it is aſſerted
letter from Babylon to Aleppo;
forty-eight hours, what is to mar
thirty days.

At a ſale of pouting pigeons in]
year 1761, one pair was ſold for fi
and nineteen pair, the whole nur
ſale, were diſpoſed of for upwa
pounds.

Many of the wild pigeons are
grate, retiring in the ſpring, anc
with us till November. Their ſun
ſuppoſed to be in Sweden.

ROBUR CAROLI, Charles's Oa
1676, the celebrated aſtronomer]
to St. Helena, a ſmall iſland i
Ocean, to take a catalogue of the fi
do not riſe above our horizon.]

The ſturdy Oak,
'rince's refuge once, th' eternal guard
England's throne, by ſweating peaſants fell'd,
ms the vaſt main, and bears tremendous war
diſtant nations, or with ſov'reign ſway
es the divided world to peace and love.

Philips.

is famous oak was ſituated near Boſcobel-
e, about the middle of the Eaſtern border of
ſhire, adjoining to Staffordſhire, twenty-ſix
from Worceſter, and at no great diſtance from
genorth or Wolverhampton*. The ſolitary
ling was inhabited by five brothers, of the
of Penderell, who clothed the king in a garb
their own, led him into the neighbouring
l, put a bill into his hand, and pretended to
oy themſelves in cutting faggots. Some nights
y upon ſtraw in the houſe, and fed on ſuch
ely fare as it afforded. For a better conceal-
he mounted upon an oak, where he ſheltered
elf among the leaves and branches for twenty-
hours. He ſaw ſeveral ſoldiers paſs by: all of
were intent in ſearch of the king; and ſome
eſſed, in his hearing, their earneſt wiſhes of
ng him. This tree was afterwards denomi-
d the *Royal Oak*†. In commemoration of the
mentioned event, oak-apples are ſtill worn by
y people in ſeveral parts of England, particu-

See Cary's Engliſh Atlas.

Charles afterwards paſſed through many other adventures,
ned different diſguiſes, and was expoſed to moſt imminent
s; but at length embarked either at Shoreham or Bright-
nſtone, in Suſſex, and, on the 22d of October, arrived ſafely
eſcamp, in the late province of Normandy, now in the
artment of Lower Seine, France.

larly in Worceſter, where the houſes alſo ar general, on the 29th of May, the anniverſar Charles's reſtoration, profuſely decorated large branches of oak ; " a cuſtom" which, it be preſumed, " would be more honoured in breach than the obſervance," as this noble tr ſaid to be much injured by cropping*.

The oak has been long acknowledged by the of the *Monarch of the Woods*, and very juſtly. was well known, and often very elegantly deſ ed, by the ancient poets. The following del tion from Virgil has been generally admired:

> As o'er th' aërial Alps, ſublimely ſpread,
> Some aged oak uprears his reverend head;
> This way and that the furious tempeſts blow,
> To lay the monarch of the mountains low ;
> Th' imperial plant, though nodding at the ſound
> Though all his ſcatter'd honours ſtrow the groun
> Safe in his ſtrength, and ſeated on the rock,
> In naked majeſty defies the ſhock :
> High as the head ſhoots tow'ring to the ſkies,
> So deep the root in earth's foundation lies.

I

It has been remarked by Lord Bacon and ot that no nation equals England for oaken ti wherewith to build ſhips, either for the purpo war or commerce. Conformably to this idea aſſertion of Thomſon :

> Unmatch'd thy guardian oaks.

The following remark of another elegant m poet is, therefore, not leſs juſt than gratify our national feelings :

---

* See The Woodland Companion.

oaſt her plants, nor envy we
ng amber and the balmy tree,
our oaks the precious loads are borne,
s commanded which thoſe trees adorn.

POPE.

l tree grows to a ſurpriſing magnitude;
been felled in Wotton-Park, Hertford-
h meaſured 24 feet in circumference,
l for 43l. another in the ſame encloſure
been diſpoſed of for fifty guineas, but
rds decayed in conſequence of ſome
rowing under it. In other parts of the
oak has been known to meaſure 20
in Hainault-Foreſt, near Barking, in
e is one which has attained the enor-
of 36 feet in circumference*. This ex-
tree has been known through *many*
the name of FAIRLOP. The tradition
try, ſays the Rev. Mr. Gilpin, in his
on Foreſt Scenery and other Wood-
," traces it half way up the Chriſtian
of our beſt poets have noticed the
ity of the oak:

the woods, the long-ſurviving oak.

COWPER.

narch oak, the patriarch of the trees,
iſing up, and ſpreads by ſlow degrees;
enturies he grows, and three he ſtays
e in ſtate, and in three more decays.

DRYDEN.

---

unter's valuable edition of Evelyn's Sylva, re-
d, there is the figure of an old oak of Cowthorpe,
hich meaſures ſixteen yards in circumference
eet of the ground.

Fairlop

oak, but rather that of a beech.
which overſpreads an area of 30
an annual fair has long been held o
in July; and no booth is ſuffered
yond the extent of its boughs; bu
mities are now become ſapleſs, a
curtailing their length, the libe
ſeem to be in a very deſponding
honour, however, is great. But
accompanied with inconveniences;
ſuffered from its honourable diſti
feaſting that attends a fair, fires ar
and no places ſeem ſo proper to
the cavities formed by the heaving
This practice has brought a more
Fairlop than it might otherwiſe ha
this tree is now fenced round wit
about five feet high. Almoſt all
of its branches have been ſawe
Forſyth's compoſition applied to
them from decay; and the injuries
of the tree had ſuſtained from
fires in the cavities, have been rep

originated the annual fair now held under it. Mr. Day had his coffin made out of one of the large arms of this tree, and kept it many years by him.

Among numerous ſocieties that have been formed, ſince the revival of the now faſhionable amuſement of archery, that of "The Hainault Foreſters," is not the leaſt diſtinguiſhed, as the principal ladies and gentlemen of the county belong to the aſſociation, and, at certain ſtated times, march in proceſſion round this venerable father of the ſylvan race. They are dreſſed in an elegant uniform, and attended by a band of muſic, and "all quality, Pride, pomp, and circumſtance of glorious" archery*.

The ancient Druids† had a moſt profound veneration for oak trees, and the Gauls are ſaid

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[*] See Sagitta, page 175.

[†] The druids were the prieſts, or miniſters of religion, among the ancient Celtæ, or Gauls, Britons, and Germans. They were the firſt and moſt diſtinguiſhed order among theſe people, and being choſen out of the beſt families, the honours of their birth, joined with thoſe of their function, procured them the higheſt veneration. The Britiſh and Gauliſh youth flocked to them in crowds to be inſtructed in aſtronomy, geometry, natural philoſophy, politics, and geography. Of their peculiar religious doctrines we know but little: that they believed the immortality of the ſoul and the metempſychoſis ‡, is generally ſuppoſed. The druids had not only the adminiſtration of all ſacred things, and were the interpreters of religion, but were alſo the judges of all affairs, indifferently. Whoever refuſed obedience to them, was not only declared impious and accurſed, but excommunicated, and thereby excluded from all public aſſemblies, and avoided by all the world; nobody daring to ſpeak to him, for fear of being polluted. Hume§ aſſerts, "That no ſpecies of ſuperſtition was

[‡] The tranſmigration of ſouls from body to body.

[§] Hiſt. of England, chap. i.

to have worſhipped Jupiter under the figure o
a lofty oak,

> The ſacred oaks,
> Whoſe awful ſhades among the druids ſtray'd,
> To cut the hallow'd miſletoe, and hold
> High converſe with their gods.
>
> H. DAVY[*]

CRUX, the Croſs. This conſtellation is ſometimes called Croſier, and ſometimes Cruſero: i conſiſts of only four ſtars in the form of a croſ which ſerve thoſe who ſail in the Southern hemiſphere to find the antarctic pole.

> The croſs, ſign of redemption, now appears,
> Relucent with four ſtars.
>
> EUDOSIA

ever more terrible than that of the druids; and that no id latrous worſhip ever attained ſuch an aſcendant over mar kind as that of the ancient Gauls and Britons:" but *throug the tender compaſſion of our* GOD, *the dawning of the day ha viſited us from on high, to enlighten our darkneſs, and to dire our feet into the way of peace.*

> The Heathens know thy glory, Lord:
> The wond'ring nations read thy word;
> In BRITAIN is JEHOVAH known:
> Our worſhip ſhall no more be paid
> To gods which mortal hands have made;
> Our Maker is our God alone.
>
> WATT

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[*] This gentleman is a native of Penzance, in Cornwal and, by his vigorous intellect, and ſcientific talents, has highl exalted himſelf in the ſcale of public reputation. He h lately been appointed chemical lecturer to the Royal Inſtitution. His poem, called "Mounts' Bay," from which th above extract was taken, poſſeſſes conſiderable merit.

BEAUTIES OF ENGLAND AND WALES, v. ii. p. 46

A cre

roſs is a gibbet made with two pieces of placed croſswiſe, whether they croſs in right at the top like a T, or in their length like That on which Jeſus Chriſt* died was of rmer kind; being thus repreſented by old nents, coins, and croſſes. This puniſhment mmon among the Syrians, Egyptians, Per- Africans, Greeks, Romans, and Jews.

death of the croſs was the moſt dreadful of ers, both for the pain and ſhame of it; and dalous, that it was inflicted as the laſt mark ſtation upon the vileſt of people. The Mo- w ordained, that the perſons executed ſhould left upon the tree after ſun-ſet, becauſe he hanged in this manner is accurſed of God. xxi. 22, 23.

croſs has been long conſidered as the enſign Chriſtian religion,

> ſer holy faith and Chriſtian croſs oppos'd
> gainſt the Saxon gods.
>
> ROWE.

croſs, or crucifix †, has alſo been occaſionally yed as a military enſign. The furious battle orth-Allerton, in Yorkſhire, between the iſh and Scots, was called the battle of the *lard*, from a high crucifix, erected by the iſh on a waggon, and carried along with the ‡. This engagement happened on the 22d of ſt 1137, in the reign of King Stephen.

The

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* ee April 3, 33, Chron. Tab.

† crucifix is a repreſentation in picture or ſtatuary of our r on the croſs.

‡ The annals of bigotry and ſuperſtition do not, perhaps, an inſtance of a more groſs and daring inſult to the com-

Land from the Turks, the croiſaders d
themſelves by croſſes of different colou
their clothes, ordered, it is ſaid, by th
Clermont; and were thence called *croi*
bearers, of whom contemporary auth
there were 6,000,000. The Engliſh
white; the French, red; the Flemiſh,
Germans, black; and the Italians, yell

mon Saviour of mankind, than that of making
emblem of miſery and deſtruction. A Saviour
the *Prince of peace*; who himſelf expreſsly decl
ciples, that *he came not to deſtroy men's lives*, *bu*
at whoſe advent *peace* was ſung, and at whoſe d
was bequeathed! It was juſtly remarked by th
Jenyns, that if *Chriſtian nations* were *nations of*
wars would be impoſſible and unknown among t
are wars and fightings among you?—Have they
the pen of inſpiration, their ſource in thoſe dep
and paſſions which conflict in your boſoms*? T
ing ſcenes which private quarrels and public wa
dreadful carnage of the field of ſlaughter, and
attempts which human creatures and brethren m

all nine croiſades, in which, according to
, upwards of two millions of human beings
. For an account of this profligate ban-
pretended Chriſtians, ſee Arith. Queſt. Art.

ments were anciently ſet in market-places
ſſes upon them to excite devotion, a cuſ-
which Shakeſpeare alludes—

> She doth ſtray about
> holy croſſes, where ſhe kneels and prays, &c.

as alſo uſual, in former times, to ſet up
where the corpſe of any of the nobility
as it was conveyed to its deſtined place of
ent.

n Eleanor of Caſtile, the beautiful and be-
onſort of Edward the Firſt, died at Horneby,
colnſhire, her remains were brought to
n, and to her memory croſſes were erected
ver the corpſe reſted on the road; namely,
rthampton, Dunſtable, Waltham-Abbey, and
g-Croſs. This was the laſt ſpot on which
dy reſted in the way to Weſtminſter-Abbey,
it was depoſited in 1290.

the heroic affection of Eleanor that monarch
erally ſuppoſed to have once been indebted
is life. The prince being wounded by a
ed dagger in the Holy Land, the princeſs,
imminent hazard of her own life, ſucked the
from the wound, and reſtored him to health.

> Midſt the weeping train around
> Fond Eleanora ſucks the poiſon'd wound.

SCOTT.

This noble conduct, ſo honourable to tl
ſex, is not, however, a ſolitary inſtance
fidelity and attachment, as Alceſte actuall
preſerve the life of her huſband Admetus
this act of conjugal piety ſhe obtained th
ing eulogy from Homer:

> All Pelia's race Alceſte far outſhin'd,
> The grace and beauty of the beauteous kir
>
> POPE'S

ARGO NAVIS. The Ship Argo. Th
to be the famous ſhip Argo which carri
and his Argonauts to Colchis to recover th
fleece[†]. Jaſon, having happily accompl
enterpriſe, conſecrated the veſſel to Nept
as others ſay, to Minerva, in the Iſthmu
rinth; where, they add, it did not rem
before it was tranſlated into heaven, anc
conſtellation.

Some mythologiſts are of opinion, that
tion of the flying-horſe Pegaſus, was notl
a ſhip with ſails, and thence ſaid to be the
of Neptune, the ſovereign of the Sea: the
over imagine, that Aries, Taurus, and
were ſhips of a new conſtruction, which wer
admired by the barbarous and uninſtructe
of remote times, and tranſlated among t
in commemoration of their inventors, an
morphoſed into conſtellations by the poets
own and ſucceeding ages.

The argonautic expedition is one of the
epochas, or periods of hiſtory, which S

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[*] See alſo Arith. Queſt. Art. Arria, Panthea, an

[†] See Art. Aries, p. 121.

ours to ſettle, and from thence to
cient CHRONOLOGY. This he
eral authorities, to have been one
about thirty years, earlier than the
y, and forty-three years later than
olomon.

, however, rejects the hiſtory of the
xpedition as a Grecian fable, founded
dition derived from Egypt, and ulti-
ring to Noah's preſervation, &c. in

e Bee *. The bee is a well-known
ct, remarkable for its ſkill in collecting
wax from flowers, &c. and on that ac-
ently preſerved in gardens :

The bee
n the bloom extracting liquid ſweet
ciouſly, and builds her waxen cells
h honey ſtored.

MILTON.

e the domeſtic or common honey-bee, Ray
s nine other ſpecies, which are found wild
the fields. Theſe little animals, in a wild
form their neſts in the hollow of ſome tree,
e cleft of a rock ; in which ſituation they
frequently ſeen and deſcribed by the old
k and Latin poets. Homer particularly in the

Apis, in mythology, was a divinity worſhipped by the
ient Egyptians at Memphis. It was an ox, having certain
ternal marks ; in which animal the ſoul of the great Oſiris,
celebrated king of Egypt, was ſuppoſed to ſubſiſt. This
nimal had the preference to all others, as being the ſymbol
f agriculture, the improvement of which that prince had ſo
much at heart. See Arith. Queſt. Art. Ox.

very firſt ſimile of the Iliad, gives the follo
animated picture of them :

> As from ſome *rocky cleft* the ſhepherd ſees
> Cluſt'ring in heaps on heaps the driving bees
> Rolling, and black'ning, ſwarms ſucceeding ſwar
> With deeper murmurs and more hoarſe alarms;
> Duſky they ſpread a cloſe embodied crowd,
> And o'er the vale deſcends the living cloud.
>
> POPE'S HO

The poet Virgil has appropriated a whole in his Georgics to the ſubject of bees, and there repeated in the moſt beautiful languag much of the polity and natural hiſtory of this w derful inſect as was known to the ancients. following brief extract will, we truſt, be accep ble to our young readers :

> Of all the race of animals, alone
> The bees have common cities of their own,
> And common ſons; beneath one law they live,
> And with one common ſtock their traffic drive.
> Each has a certain home, a ſev'ral ſtall:
> All is the ſtate's, the ſtate provides for all.
> Mindful of coming cold, they ſhare the pain:
> And hoard, for winter's uſe, the ſummer's gain.
> Some o'er the public magazines preſide,
> And ſome are ſent new forage to provide:
> Theſe drudge in fields abroad, and thoſe at home
> Lay deep foundations for the labour'd comb,
> With dew, Narciſſus' leaves, and clammy gum.
> To pitch the waxen flooring ſome contrive,
> Some nurſe the future nation of the hive:
> Sweet honey ſome condenſe, ſome purge the grout,
> The reſt, in cells apart, the liquid nectar ſhut.
> All, with united force, combine to drive
> The lazy drones from the laborious hive.
>
> DRYDEN'S VIRG
>
> Bo

g the moſt diligent creatures, have
n pictures the emblems of induſtry,
· the exemplars of it. They are alſo
vident, not of inſects only, but of all
d their natural hiſtory is the moſt
intereſting *. That the lives of mil-
: faithful labourers ſhould be annually
procure their honey, is a painful re-
perſon of humane diſpoſitions. Thom-
hed the ſubject in his uſual pathetic

vhere, robb'd and murther'd, in that pit
ill-heaving hive! at evening ſnatch'd,
ne cloud of guilt-concealing night,
o'er ſulphur: while, not dreaming ill,
y people, in their waxen cells,
g public cares, and planning ſchemes
rance, for winter poor; rejoic'd
, full-flowing round, their copious ſtores.
he dark oppreſſive ſteam aſcends;
'd to milder ſcents, the tender race,
ands, tumble from their honey'd domes,
'd, and agoniſing in the duſt.
s it then for this you roam'd the Spring,
rom flower to flower! for this you toil'd
ſs the burning ſummer-heats away!
in Autumn ſearch'd the blooming waſte,
t one ſunny gleam!—for this ſad fate!
, tyrannic lord! how long, how long,
oſtrate nature groan beneath your rage,
g renovation? When oblig'd

---

aſing account of their amazing qualities and inſtincts
n in Mr. Arthur Aikin's "Natural Hiſtory of the
r. Young's "Treatiſe on Humanity to Animals;"
more particular deſcription of their polity, the
d the Ency. Brit. may be advantageouſly conſulted:
e notice has alſo been taken of the bee in the
rith. Queſt.

Muſt you deſtroy? Of their ambroſial food
Can you not borrow, and, in juſt return,
Afford them ſhelter from the wintry winds;
Or, as the ſharp year pinches, with their own
Again regale them on ſome ſmiling day?
See where the ſtony bottom of their town
Looks deſolate and wild, with here and there
A helpleſs number, who the ruin'd ſtate
Survive, lamenting weak, caſt out to death!

Acт

The following reflections will, we are perſu be found in perfect harmony with the ſenſibili the female heart. Whenever we taſte the frui the labours of theſe inſects, we ought to re ſays Mr. Young, how much toil every dr honey has coſt, how much ſkill has been ex in collecting it, how many fields were trav and how many flowers viſited, in order to pr it; and, above all, until a change for the b take place, we ought to reflect how many have been taken in order to come at it. As t are at preſent, it is ſomewhat remarkable, and afflicting to a feeling mind, that we cannot our diſhes ſweetened, unleſs at the expence of t ſands of lives, either of theſe wonderful ani or, dreadful to think, of our fellow-creatures*

Hɪʀᴜ

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* It may, perhaps, be neceſſary to inform ſome c young readers, that Mr. Young, in this paſſage, alludes execrable traffic in the *fleſh* and *blood* of the wretch offending ſons and daughters of Africa, whom, in defian every principle of religion, humanity, and juſtice, we tea the land of their nativity to be *bondmen* and *bondwo* the colonies of *free* CHRISTIAN ſtates, till welcome puts an end to the bitterneſs of their ſorrow, and proc deliverance from the galling yoke.

INDO, the Swallow. A curious queſtion
n much diſcuſſed concerning this bird,
What becomes of it in the winter?
Upon

ect, ſaid Mr. PITT, on 80,000 perſons annually torn
ir native land! on the connections which are
on the friendſhips, attachments, and relationſhips
burſt aſunder! There is ſomething in the horror
t ſurpaſſes all the bounds of imagination.'' The
d villanies to which this horrid traffic has given riſe,
ged been lately detailed with a minuteneſs which has
t merely the perſons actually concerned, but human
ſelf, in a light the moſt degrading and deteſtable. Its
as Mr. Wilberforce well remarked, is written in cha-
f blood. See Arith Queſt. Art. Sugar.
ortugueſe were the firſt Europeans who embarked in
uitous trade: their vile example was ſoon followed by
h; and the Engliſh, in the time of Queen Elizabeth,
d in the ſame nefarious buſineſs. To the name of
Hawkins is attached the infamy of having, in 1562,
ed this blood-ſtained commerce into England. Sen-
length of its enormity, he erected in 1592 (three years
is death) an hoſpital at Rocheſter, as an atonement to
humanity. Noble and generous, though hitherto un-
l efforts, have been recently made in the Britiſh par-
to effect an abolition of this abominable traffic;—
which, however they may terminate, will (ſays an ele-
iter) in the volume of the *recording angel*, "on leaves
lurable than leaves of braſs," enroll the names of
ERFORCE, of SMITH, of DOLBEN, and many others,
illuſtrious catalogues of the friends and benefactors of
d; and more particularly of that deſpiſed and unfortu-
ce of men born only to miſery, and to whoſe wretched
oſt pitiable lot it has fallen "to plough the winter's
nd reap deſpair."——

riends of the friendleſs—Hail, ye generous band!
hoſe efforts yet arreſt Heaven's lifted hand;
round whoſe ſhady brows, in union bright,
he civic wreath and Chriſtian's palm unite;
our merit ſtands—no greater and no leſs
ithout or with the varniſh of ſucceſs.

Mrs. BARBAULD.

There

Upon this ſubject there are three opinions ſay, that it migrates to a warmer climate that it retires to hollow trees and caverns it lies in a torpid ſtate; and others have that it continues in the ſame ſtate in the lakes and under the ice. The argument which each opinion is founded are diſtinctly in the ENCY. BRIT. Art. Swallow; and Arthur Aikin's "Natural Hiſtory of the It ſeems to be pretty evident, ſays this p writer, that ſwallows do not ſpend the wi der water: that a few, probably ſome of th broods, remain with us during the winter, moſt part, in a ſtate of torpidity: but th main body migrates acroſs the channel to and thence at Gibraltar paſſes to the N ſhores of Africa, returning by the ſame road, Spring, to Great-Britain.

When Autumn ſcatters his departing gleams,
Warn'd of approaching Winter, gather'd, play
The ſwallow-people; and toſs'd wide around,
O'er the calm ſky, in convolution ſwift,

There is, however, ſubſtantial reaſon for hoping that the is not very diſtant when,

"Spite of the ſhade at length confeſs'd a man,
"Nor longer whipp'd becauſe he is not white *;"—

the poor negro ſhall enjoy his natal ſoil in peace; when P glorious prophecy in his favour ſhall be accompliſhed;—

And the *freed Indians* in their native groves,
Reap their own fruits, and woo their ſable loves.

* Monteſquieu, in his "Spirit of Laws," ſpeaking with a juſt con and humorous ſeverity againſt all the arguments brought in defen this cruelty, ſays, that the ſtrongeſt reaſon which can be given fo practice of uſing Negroes, like beaſts of burden, is, *their having black and flat noſes.*

feather'd eddy floats: rejoicing once,
to their wintry ſlumbers they retire;
luſters clung, beneath the mould'ring bank,
where, unpierc'd by froſt, the cavern ſweats;
rather into warmer climes convey'd,
th other kindred birds of ſeaſon, there
ey twitter cheerful, till the vernal months
ite them welcome back: for, thronging, now
umerous wings are in commotion all.

THOMSON.

DUS, the Indian. An Indian, in popular
age, generally means a native of the uncivil-
ed parts of America. One great peculiarity
oſe Indians is their colour, which is naturally
ering upon red, and they have great pleaſure
gmenting this colour by painting their bodies
a certain ſpecies of earth. They are remark-
for an inſenſibility to pain, and ſuffer the moſt
uciating tortures without emitting a ſigh.
ed, the cruelties which are practiſed upon
ners of war are too horrid for recital; yet
mention of them here may not be entirely
ſs, as they ſhew, in the ſtrongeſt light, to
t an inconceivable degree of barbarity, to
t a pitch the paſſions of men may be carried,
n untamed by the refinement of poliſhed
ety, when let looſe from the government of
on, and uninfluenced by the dictates of CHRIS-
NITY; a religion that teaches *compaſſion to*
enemies, which is neither known nor practiſed
ther inſtitutions. It may alſo give our young
ers ſome idea of the value of commerce, the
antages of a civilized life, and the benefit of
rature; which, if they have abated the force
ſome of the natural virtues, by the luxury
ich attends them, have taken out likewiſe the

ſting of our natural vices, and ſofte
city of the human race. The attachn
friends is another ſtriking trait in the
theſe ſavages. For with them, as with
of old,

> A generous friendſhip no cold medium kn
> But with one love, with one reſentment, g
>
> POPE'

And they think that thoſe in their alli
not only adopt their enmities, but have
ſentment wound up to the ſame pitch wi
ſelves. As almoſt the only method on wh
depend for acquiring the neceſſaries of lif
hunting the wild animals which their mo
and foreſts ſupply, they are, as might be ex
very expert in the uſe of miſſile weapons
Robertſon informs us, that ſome Caribbee
their bows with great dexterity while ſwim
in the water; and that there are tribes of In
who can ſend their arrows to the diſtance of
paces without the aid of a bow. See our
Sagitta, (p. 175). It is, therefore, with great
priety that INDUS appears on the globe with
arrow in his hand, and in a ſtate of nudity; ſ
it is ſaid that even the utmoſt rigours of t
winter ſeaſon do not prevent him from followi
the chace almoſt naked *. Next to hunting,

taſ

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* The learned author of EUDOSIA, however, calls Indu
the "regal Indian," and adds,

> Sure that form is thine,
> O GUATAMOZIN! whom the Mexique realms
> Admir'd, the aſſertor of their liberties,
> And freedom bore thy ſtandard, though in vain
> Againſt injuſtice gloriouſly oppos'd.

Th

or war forms the chief ingredient in their ter, and gives a ſtrong bias to their religion. KOUI, or the god of battle, is revered as the god of the Indians. Him they invoke before go into the field; and according as his diſ- on is more or leſs favourable to them, they ve that they ſhall be more or leſs ſucceſsful. worſhip the ſun and moon; among others are numbers of traditions, relative to the on of the world and the hiſtory of the gods: ions which reſemble the Grecian fables, but are ſtill more abſurd and inconſiſtent. Re- is not, however, the prevailing character Indians, ſince, except when they have ſome diate occaſion for the aſſiſtance of their gods, pay them no ſort of worſhip. Like all rude ns, they are of courſe ſtrongly addicted to ſtition. They believe in the exiſtence of a er of good and bad genii or ſpirits, who in- e in the affairs of mortals, and produce all appineſs or miſery: but, according to a great they are cheered by the hope of "a life to :"

the poor INDIAN! whoſe untutor'd mind
s God in clouds, or hears him in the wind;
ſoul proud Science never taught to ſtray
as the ſolar walk, or milky way;
: ſimple Nature to his hope has giv'n,
ind the cloud-topt hill, an humbler heav'n;

---

eroic prince was the nephew, ſon-in-law, and ſucceſſor NTEZUMA, the moſt powerful monarch in the new Being, after a brave reſiſtance, entirely routed and priſoner by the infamous Cortez, he was baſely ſubjected torture, and afterwards hanged by order of that exe- conqueror of Mexico.

His *faithful* dog† ſhall bear him com

CAMELEON. This little anim
ſpecies of lizard, is famous amo
and modern writers in natural hiſto
that it is ſuppoſed to have of chan
and aſſuming thoſe of the objects ne

—The cameleon, which is know
To have no colours of his own,
But borrows from his neighbour
His white or black, his green or

.* This remark alludes to the horrid c
by the Spaniards, who tortured and put to
of the innocent natives of America, to c
their wealth. Theſe wholeſale butchers
nevertheleſs. the audacity to ſtyle themſ
Exceptionable as is the character of the I
and revenge, it may, ſay the learned Ed
Brit. be fairly queſtioned, whether the i
either in reſpect of their cauſe or their
comparable to thoſe exhibited in European
in the annals of Christendom;—to thoſ

uraliſts are very little agreed as to the reaſon
nanner of its change of colour. Some maintain
it is done by ſuffuſion; others by reflection;
ers, as the Carteſians, by the different diſpo-
on of the parts that compoſe the ſkin, which
e a different modification to the rays of light.
e aſcribe the change of colour in the cameleon
he power of imagination in the animal, becauſe
oſes it when dead; others, again, impute the
tamorphoſis to the grains of the ſkin, which in
eral poſtures, they contend, may ſhew ſeveral
ours; and, when the creature is in full vigour,
y have the effect of mirrors, and reflect the
ours of adjacent bodies. The animal, having
in its power to fill the ſkin more or leſs, has the
lity not only to alter the tone and texture of
fibres, upon which their reflexive quality, in
reat meaſure, depends; but alſo to bring parts
o ſight, which before lay concealed, or to
nceal ſuch as before lay open; and it is more
an probable, that the parts which are ordinarily
vered, are of a ſomewhat different colour from
oſe conſtantly expoſed to the air.

On theſe principles, perhaps, all the phenomena
the cameleon's colour may be ſolved. The
imal, it is evident, has a power to reflect dif-
rently-coloured rays from the ſame parts; alſo to
ake certain parts reflect, and to prevent others
om reflecting; and hence that variety, that
edley of colours.

This is not the only animal poſſeſſed of the pro-
rty of changing its colour; another ſort of
zard, when he ſwells with anger, is ſaid to
ange his colour from green to a kind of ruſſet.

The like is aſſerted of an inſect in the iſle of Nevis,
e of the Caribbee-Iſlands, in the Weſt-Indies.

but it has been obſerved to feed
with its tongue, which is abou
in length.

Piscis Volans, the Flying fi
name given by the Engliſh writ
kinds of fiſh, which, by means of t
have a method of keeping them
water for ſome time. One particul
ſpecies is able to riſe out of the ſea,
conſiderable diſtance in the air;
wings are dry, is obliged to plunge
water to moiſten them. It does th
purſued by an enemy; and whole ſh
ſeen thus flying together. It is c
Mediterranean, and ſome other ſe
dom known in ours, or in any
climates.

Xiphias, the Sword-fiſh. Thi
is ſometimes called Dorado.

The ſword-fiſh, in ichthyology,
able for the ſhape of its ſnout, whi
in the form of a ſword, that it has b
all nations by a name expreſſive of

ly by the Sicilians, at its firſt coming in
n, which is in May. The modern manner
king this fiſh, by the harping-iron, is the
as was practiſed in the time of Strabo, who
A. D. 25. He was a celebrated Greek philo-
er, geographer, and hiſtorian.

DEFINITIONS.

. DECLINATION of the ſun, moon, or ſtars,
eir diſtance North or South from the equator,
oned in degrees, minutes, &c. of the general
idian, towards the North or South poles.

. RIGHT ASCENSION, is that degree of the
ator which comes to the meridian with the
moon, or ſtar, reckoning from the firſt point
Aries. The reaſon why it is called the right
nſion of the ſun or ſtar, is, becauſe it is that
nt of the equator which riſes along with it in
ight ſphere, or comes along with it to the
ridian in an *oblique ſphere*.

3. OBLIQUE ASCENSION, or DESCENSION,
that degree of the equinoctial counted from the
t point of Aries, which riſes or ſets, *i. e.* comes
the horizon when the ſun, a ſtar, or other phe-
menon, is either riſing or ſetting.

4. ASCENSIONAL DIFFERENCE, is the dif-
ence between the right and oblique aſcenſion
deſcenſion; which being converted into time
allowing 15° to an hour (ſee page 23) ſhews
w long the ſun riſes or ſets before or after ſix
lock.

5. LATITUDE of a ſtar or planet, is its tance from the ecliptic, reckoned in deg minutes, &c. upon the arc of a great circle, w is perpendicular to it, toward the poles o ecliptic, either North or South. The quadra altitude is generally uſed for this purpoſe.

N. B. The ſun, being always in the ecl has not any latitude.

6. LONGITUDE of a ſtar or planet, diſtance from the firſt point of Aries, rec Eaſtward in degrees, minutes, &c. upon ecliptic. The ſun's place in the ecliptic called its longitude; but we do not uſually of the ſun's longitude, becauſe we call it *his* in the ecliptic, reckoning it no further back than from the beginning of the ſign in wh is. So on the 25th of June, we ſay the in the 14° of Cancer, and not in the 10 longitude.

7. AMPLITUDE, is the number of d that the ſun or a ſtar riſes or ſets from th or Weſt points of the horizon, counted o horizon towards the North and South ca points; and it increaſes with the latitude place.

Amplitude is diſtinguiſhed by ſome write *ortive* and *occaſive*, or the amplitude at the and *ſetting* of any heavenly body.

8. AZIMUTH of any celeſtial object, number of degrees contained in an arc horizon, which is between the Eaſt and Weſt of the heavens, and a vertical circle paſſing th the centre of that object.

. Amplitude and Azimuth are nearly the former ſhewing the bearing of any object from the Eaſt or Weſt points of the , at its *riſing* or *ſetting*, and the latter the of any object from the North or South thereof when it is *above the horizon:* e. g. un riſe or ſet within 10° of the Eaſt or uppoſe towards the South, we ſay its am- is 10° Southerly; but if it be of any height he horizon, and the vertical circle croſſing d paſs through the juſt-mentioned point, we ay its azimuth is 80° South, or 100° from rth, theſe expreſſions being ſynonimous.

e perſons, when they ſpeak of the ſun's h in general terms, mean his diſtance from uth; of courſe he has not, with theſe wri- ny azimuth when on the meridian; others azimuth from any of the four cardinal , mentioning, however, at the ſame time, which point they count it.

imuth, or vertical circles, are great circles paſs through the zenith and nadir, and are ndicular to the horizon. Theſe can never tually drawn on a globe, becauſe the zenith, , and horizon, are ever variable: but the ant of altitude being moveable, when one f it is fixed on the zenith, the graduated of it may be laid over the place of the ſun r, and brought down to the horizon; then preſents any azimuth or vertical circle in h the ſun or ſtar is, and thus exhibits the ee of its azimuth on the horizon.

ALTITUDE, the height of the ſun, moon, tars, above the horizon, reckoned upon a vertical

As the word altitude is u
height of the ſun or a ſtar abo
the depreſſion of either of theſ
tance below the horizon. Se
Problems 13, 14, 15, 16, page

10. **Direct.** A planet is
when it moves according to
ſigns, as from Aries toward Tau

11. **Retrograde**; an a
the planets in ſome parts of t
they ſeem to go backwards,
order of the ſigns.

12. **Stationary**; a pla
ſtationary when it has no appare
N. B. The planets, at differ
the three laſt mentioned appe
inſpection of an orrery * in
the reaſon.

Digit, in aſtronomy, the 12th part
e ſun's diameter, which is often uſed in cal-
ing eclipſes.

Geocentric place of a planet, is that
on which it has when ſeen from the earth.

Heliocentric place of a planet, is that
hich it would appear to a ſpectator placed in
n.

Pole Star; a ſtar of the ſecond magni-
in the tail of the Little Bear; ſo called
its being ſituated near the North pole of
world.

Precession of the **Equinoxes**, is a
denoting that very ſlow inſenſible motion by
h the equinoxes change their place, going
ward or Weſtward, *i. e.* contrary to the order
e ſigns. It is ſhewn by modern aſtronomers,
the pole, the ſolſtices, the equinoxes, and

---

of that invaluable work have alſo inſerted figures and
unts of the grand orrery made by Rowley for King
ge I. and of a machine under this title contrived by the
eminent aſtronomer James Ferguſon.
he reaſon of its being called an orrery was this: Mr.
ley, a mathematical-inſtrument maker, born, as Dr.
nſon informs us, at Litchfield, having procured one
n Mr. George Graham, the original inventor, to be ſent
ad with ſome of his own inſtruments, he copied it,
made one himſelf for the Earl of Orrery. Sir Richard
ele, who knew nothing of Mr. Graham's machine, think-
to do juſtice to the firſt encourager as well as to the
entor of ſuch a curious inſtrument, called it an **Orrery**,
gave Mr. Rowley the praiſe due to Mr. Graham. See
Cyclop. and Ency. Brit. Art. Orrery; and Deſaguliers'
periment. Phil. vol. i. p. 430.

all the other points of the ecliptic
grade motion, and are continuall
Eaſt to Weſt, or from Aries tow
by which means the equinoctial poi
further and further back, among
ſigns of ſtars, at the rate of about
ſeventy-two years, and this retrog
called the Preceſſion, Receſſion,
of the Equinoxes. Hence, as t
remain immoveable, and the equi
ward, the ſtars will ſeem to move
Eaſtward with reſpect to them ; wh
tudes of the ſtars, which are reck
firſt point of Aries, or the vernal
continually increaſing.

Hence it is that the conſtella
changed the places aſſigned them
aſtronomers: in the time of Hipp
oldeſt aſtronomers, the equinoctia
fixed to the firſt ſtars of Aries and
ſigns are no longer in the ſame p
ſtars which were then in conjunctio
when he was in the equinox, are
ſign, of thirty degrees, to the Eaſ
the firſt ſtar of Aries is now in the
ecliptic called Taurus ; and the firſt
now reſides in Gemini ; and Gemi
into Cancer, &c.

> Some ſay the Zodiac conſtellations
> Have long ſince chang'd their antiq
> Above a ſign, and prove the ſame
> In Taurus now, once in the Ram.

The phyſical cauſe of the preceſſi
noxes, according to Sir Iſaac N

he broad ſpheroidal figure of the earth; tſelf ariſes from the earth's rotation round ; for as more matter is accumulated all the equatorial parts than any where elſe earth, the ſun and moon, by attracting this nce of matter, bring the equator ſooner them in every return towards it, than if as no ſuch accumulation.

PROBLEM LIV.

To find the Declination of any fixea

BRING the given ſtar to the gra
of the brazen meridian, and the
it is the declination. See Def. 1. p. 24

EXAMPLES.

What is the declination of the ſtar A
Boötes ?—Anſ. About 20 degrees Nortl

Required the declination of the follov

PROBLEM LV.

d the right Aſcenſion of the Sun, or any fixed Star.

ıg the ſun's place, or any given ſtar, to the
ı meridian, and that degree of the equator,
is cut by the meridian, is the right aſcen-
quired. See Def. 2. p. 147.

EXAMPLES.

at is the right aſcenſion of the ſun on the
ɔf March, and on the 21ſt of September?—
) and 180 degrees.
at is the right aſcenſion of the ſun on the
ing days:
uary 4—February 4—March 30—April 25—
18—June 27—July 9—Auguſt 15—Septem-
—October 22—November 18—December 2.
ıat is the right aſcenſion of Aldebaran, in
ıs?—Anſ. About 65 degrees.

quired the right aſcenſion of the following
α, *Vega*, or *Venga*, in Lyra—β, in the
of Draco—α, in the Southern ſcale of Libra—
beat, in the leg of Aquarius—α, in Delphi-
α, in Columbo Noachi—β, *Rigel*, in Orion's
-β, *Deneb*, in the tail of Leo—β, in the
ler of the Cameleon—β, the Eaſtern ſtar in
ro—α, in the tail of Apus—the ſtar in the
ern branch of Robur Caroli—α, in the Eaſt-
orn of Aries—α, *Cor Leonis*, or *Regulus*,
o, on the ecliptic—β, in the body of Urſa
r—the *Hiades*, in the head of Taurus—β, *Seat
as*, in the thigh of Pegaſus—*Cor Caroli*, be-
ı Aſterion and Chara, the dogs held by Boötes.

PROBLEM

PROBLEM LVI.

To find any Star on the Globe, by having nation and right Aſcenſion given

Find the right aſcenſion on the equ bring it to the braſs meridian; then c the equator, on the meridian, the give tion, towards the pole which its name and the ſtar under this point will b required.

N. B. By this problem, any ſtar, other body, may be inſerted on the gl its right aſcenſion and declination are gi

EXAMPLES.

What ſtar has its right aſcenſion 7 declination 8°½ South?—Anſ. Rigel.

. Required the ſtars whoſe right aſce declinations are nearly as follow:

108° R. A.	32° N. D.	226° R. A.
162° R. A.	57° N. D.	210° R. A.
43° R. A.	40° N. D.	21° R. A.
295° R. A.	8° N. D.	94° R. A.
98° R. A.	17° S. D.	0° R. A.
80° R. A.	0° D	149° R. A.
243° R. A.	26° S. D.	340° R. A.
140° R. A.	68° S. D.	82° R. A.

PROBLEM LVII.

d the Latitude and Longitude of a Star.

the pole of the ecliptic, in the ſame ere with the ſtar, to the brazen meridian, ich fix the quadrant of altitude, and bring uated edge in contact with the ſtar: the on the quadrant then cut by the ſtar is its , and the degree of the ecliptic interſected uadrant is its longitude. See Def. 5 and 6,

The uſe of the longitude and latitude of s is, to fix their places on the globe, &c. efer the planets and comets to the ſtars; ind the diſtances between any of them; ly, to determine whether they have any whether any ſtars vaniſh, or new ones &c.

EXAMPLES.

t are the latitude and longitude of the ſtar , in the conſtellation Auriga?—Anſ. About rth latitude, and 18° longitude in Gemini, from the firſt degree of Aries.

t are the latitude and longitude of *a Pes i*, in the conſtellation of Centaurus?— bout 43 degrees of South lat. and 236 of long. from Aries, or 26 degrees pio. In like manner *a*, *Fomalhout*, in Auſtralis will be found to have about 21 South lat. and 331 degrees of long. from or 1 degree in Piſces.

nous—δ, in the forehead of C
Sagittarius—ι, in Teleſcopium *-

* Teleſcopium, the teleſcope, is a S
between Pavo and Corona Auſtralis.

A teleſcope is an optical inſtrumen
diſcovering and viewing diſtant objects
glaſſes, or by reflection, by means of ſpec

The ſpectacles with which t
Are read in ſmalleſt characte

The invention of the teleſcope is o
moſt uſeful that modern ages have to bo
of this inſtrument the wonders of the
to us, and aſtronomy is brought to a
of which former ages could have no conc

The honour of this invention is n
the learned. It is aſcribed to our o
famous Roger Bacon; to Johannes B
politan; to Janſen, a ſpectacle-make
Holland; and to others. It is certain
celebrated Galileo * was the firſt who in
anſwer aſtronomical purpoſes; hence t

[illegible]

ſhoulder of Lupus—α, in the right hoof
s—β, in the left knee of Pegaſus—α, in
of Xiphias—β, in the body of Grus—
lydra, in Hydra.

PROBLEM LVIII.

t what Hour any Star riſes, culminates, or
he Latitude of the Place and Day of the
being given.

t the globe to the ſtate of the heavens at
o'clock for the given place and day; bring
to the Eaſtern ſide of the horizon, and
x will ſhew the hour of its riſing; turn the
ill the ſtar comes to the brazen meridian,
e index will ſhew the time of its culmi-
; laſtly, bring the ſtar to the Weſtern verge
horizon, and the index will exhibit the
f its ſetting.

EXAMPLES.

what hour does Sirius riſe, culminate, and
t London, March 20?—Anſ. Sirius riſes
two in the afternoon, culminates about
in the evening, and ſets about a quarter
eleven.

equired when the following ſtars riſe, culmi-
, and ſet, at the places and on the days men-
ed below.
one, lat. 56° N. January 1, α, *Spica Virginis*,
irgo—Stirling, lat. 56 N. Feb. 19, α, *Sirius*
anis Major—Madrid, lat. 40 N. March 6, α,
Aries—Edinburgh, lat. 56 N. April 5, α, *Al-*

Brighthelmſtone, lat. 51 N. (
girdle of Boötes—Dumfermlin
19, ε, *Vendemiatrix*, in the N
ing the wing of Virgo—Tow
Dec. 7, γ, in the extremity c
Linlithgow, lat. 56 N. Jan.
horn of Aries—Owhyhee, la
the ſtars in the head of Tau
Guiaquil, lat. 3 S. March 25,
Pavo—Jamaica, lat. 18 N. M
South of Crater—London, lat
the ſtars in Muſca, Eaſt of
lat. 54 N. Auguſt 14, γ, *Be*
Cadiz, lat. 36 N. Sept. 15, th
of Gemini—Quito, lat. 0. O
Minor—London, Nov. 15, ε,
claw of Scorpio, near the body.

PROBLEM

[illegible]

EXAMPLES.

at is the ſun's oblique aſcenſion at London, 1½ N. at the equinoxes?—Anſ. 0° at the l; 180° at the autumnal equinox.

quired the ſun's oblique aſcenſion at the fol- g places on the days annexed.

erſburgh, lat. 60 N. Jan. 28—Edinburgh, 6 N. Feb. 9—Tewkeſbury, lat. 52 N. Mar. London, April 9—Dover, lat. 51 N. May 25 milla, lat. 14 N. June 20—Carthagena (South ica) lat. 10 N. July 9—Hague. lat. 52. Auguſt Stockholm, lat. 60 N. Sept. 29—Mount vius, lat. 41 N. October 19—Porto Bello, 10 N. Nov. 2—Rome, 42 N. Dec. 30.

PROBLEM LX.

ind the aſcenſional Difference, or the Time the un riſes before or after Six. See Defin. 4, age 247.

ind the right aſcenſion of the ſun by Problem page 255, from which ſubtract the oblique enſion, ſought as directed in the laſt Problem, l the remainder is the aſcenſional difference in grees, which, converted into time, reckoning ° to an hour, will give the hour of ſun-riſing.

N. B. In Northern latitudes, when the ſun in any of the Northern ſigns, it riſes *before*, d when in any of the Southern ſigns, *after* o'clock.

EXAMPLES.

What are the ſun's right aſcenſion, oblique ſcenſion, aſcenſional difference, and the time of

Required the ſun's right a
aſcenſion, and aſcenſional differe
of its riſing, at each of the follow
days annexed.

Cherſon, lat. 46 N. January
lat. 52 N. Feb. 7—Stockholm,
16—Boſton (in America) lat.
Jamaica, lat. 18 N. May 3—C
N. June 11—Londonderry, lat.
Havannah, lat. 23 N. Auguſt
47 N. Sep. 13—Tappon (in the
York) lat. 41 N. Oct. 2—Li
Nov. 1—Frederickſhall, lat. 59

PROBLEM

To find the Sun's Amplitude at
on any given Day. See Defi

Rectify the globe for the pr

EXAMPLES.

What is the amplitude of the ſun at London at equinoxes ?—Anſ. 0.

Required the ſun's amplitude, ortive and occa-e, at each of the following places on the days nected with them.

Linlithgow, lat. 56 N. January 23—Vienna, t. 48 N. Feb. 20—Kinſale, lat. 52 N. March —Tobago, lat. 12 N. April 14—Bugia, lat. 7 N. May 10—Rome, lat. 42 N. June 29—lenciennes, lat. 50 N. July 25—Trincomale, t. 9 N. Auguſt 26—Dunkirk, lat. 47 N. Sep. 8. —Warſaw, lat. 52 N. Oct. 10—Warſaw, Nov. 8—Oczakow, lat. 47 N. Dec. 17.

N. B. The ſun's amplitude varies daily, but he amplitude of the fixed ſtars is the ſame all the year; thus in latitude 51½ North, the amplitude of Sirius is about 28 degrees Southerly.

Required the amplitude of the following ſtars at the places mentioned with them.

Aldebaran, in Taurus, at Cape St. Vincent's, lat. 37 N.—*Caſtor*, in Gemini, at Mantua, lat. 45 N.—*Regulus*, or *Cor Leonis*, in Leo, at Pavia, lat. 45 N.—*Spica*, in Virgo, at Culloden, lat. 57 N.—*Dubhe*, in Urſa Major, at St. Andrew's, lat. 56 N.—*Arcturus* in Bootes, at Newfoundland, lat. 52 N.—*Vega*, in Lyra, at St. Martha (near Carthagena, South America) lat. 11 N.—*Achernar*, in Eridanus, at Saldanha-Bay, lat. 32 S. —*Canopus*, in Argo Navis, at Botany-Bay, lat. 34 S.—*Sirius*, in Canis Major, at Amboyna, lat. 5 S.

PROBLEM LX

To find the Sun's Azimuth for any
the Day, at any propoſed Place.
page 248.

Rectify the globe for the given pl
hour; fix the quadrant of altitude
and bring its edge in contact with th
then the number of degrees on the
tercepted between the points of No
and that part of the quadrant whic
horizon, is the azimuth of the ſun
time, either Eaſterly or Weſterly.

EXAMPLES.

What is the ſun's azimuth at Lon
at nine o'clock in the morning?—A
degrees South azimuth; *i. e.* 66 degr
South, Eaſterly; or 114 degrees azim
North; or 24 degrees from the Eaſt,

Required the ſun's azimuth at t
places, on the annexed days and hours.
Cape St. Vincent's, lat. 37 N. Jan
in the morning—Edinburgh, lat. 56
eleven in the morning—Palos, lat.
15, eight in the morning—St. Paul's,
April 23, eleven in the morning—Li
N. May 29, nine in the morning,
the afternoon—Peterſburgh, lat. 60
ſix in the morning, or afternoon—Je
32 N. July 5, ſeven in the morning
the afternoon—Blenheim (in German

., ten in the morning—Paris, lat. 49 N. eleven in the morning—Guanahani, or lor, lat 25 N. Oct. 12, two in the after- :arva, lat. 59 N. Nov. 30, three in the ı—Frederickſhall, lat. 59 N. Dec. 11, ıe morning, or three in the afternoon.

PROBLEM LXIII.

be Hour of the Day; the Latitude, Day of Ionth, and Sun's Azimuth, being given.

: the globe to the propoſed latitude and ıy at noon; fix the quadrant of altitude :nith, and move its edge to the propoſed ; then revolve the globe till the ſun's ›mes in contact with the verge of the ·, and the index will point to the hour .

EXAMPLES.

is the hour at London, lat. 51½ degrees uly 22, the ſun's azimuth being 66 degrees : South, Eaſterly?—Anſ. Nine o'clock in ıing.

red the hour of the day at the following m the annexed days and propoſed azimuth ın.

ɔn, lat. 51½ N. January 30, ſun's azimuth › the South, Eaſterly.—Roſlin near Edin-

from the Weſt, Southerly—Aginc
Oct. 25. ſun's azimuth 30° fr
Weſterly—Mexico, lat 20, Nov.
25° from the Weſt, Southerly,—
Dec. 22, ſun's azimuth 30° fr
Weſterly.

PROBLEM L

To find the Day of the Month, the S
being given. See Problem 9,

Obſerve the given degree of
turn the globe till ſome part of th
in contact with the ſaid degree ; t
ing the horizon for the day corr
that point of the ecliptic which
the degree of the ſun's declinatio
anſwer required.

PROBLEM LXV.

Sun's Meridian-Altitude on any Day being iven, to find the Latitude of the Place of Obſervation. See Problem 13, page 43.

Bring the ſun's place in the ecliptic to the me- lian, and elevate or depreſs the globe till there e as many degrees as are equal to the meridian- itude, intercepted between the ſun's place and e North or South point of the horizon, as the ſe requires, and the elevation of the pole above e horizon will be equal to the latitude of the lace.

EXAMPLES.

Obſerved the ſun's meridian-altitude on the 18th f May, and found it to be 42° South: what was the latitude?—Anſ. 67° North.

Again: obſerved the ſun's meridian-altitude on the 5th of Auguſt to be 74° North, What is the latitude of the place of obſervation?—Anſ. 2° North.

N. B. The ſun's altitude may be eaſily taken by any quadrant having ſights and a plumb-line; for, holding this inſtrument towards the ſun, in ſuch a poſition that its rays may paſs through both ſights, the plumb-line will then interſect that degree on the limb of the quadrant which is equal to the height of the ſun. But the beſt and moſt accurate method of obtaining the ſun's altitude, is by a HADLEY's quadrant, an admirable inſtrument, which is now generally employed in taking the altitudes of celeſtial objects. Its inventor, John Hadley, Eſq. Vice-Preſident of the Royal

Society,

Octant is the eighth part of a cir
grees, the dimenſions of Hadley's
drant; though a ſextant, or ſixth
is now ſaid to render it more uſeful

Required the latitude of the pl
with the annexed meridian-altitude
the ſubjoined days:
Sun's meridian-altitude 38° South
Sun's M. A. 48°, Feb. 17—Sun
March 11,—Sun's M. A. 30°, A
M. A. 64°, May 17—Sun's M. A.
Sun's M. A. North, 25°, July 29-
48°, Auguſt 6, Sun's M. A. 30°, S
M. A. 18°, Oct. 21—Sun's M. A.
Sun's M. A. 45°, Dec. 10.

PROBLEM LX

To find the Depreſſion of the Sun belo
and its Azimuth at any Hour in

ciſely half a revolution, counted by the
on the hour circle, and find the ſun's al-
d azimuth for that point, as directed in
15, page 45, and Problem 62, page 264,
will be the depreſſion and the azimuth

EXAMPLES.

is the ſun's depreſſion below the horizon
lon, lat. 51½, Nov. 1, at 10 o'clock at
—Anſ. About 45 degrees depreſſion, and
ees azimuth from the North part of the
towards the Weſt.
n, on the 11th of May, at nine o'clock
t, at London, the ſun's depreſſion will be
o be about 10 degrees; and its azimuth
40 degrees from the North towards the

ired the depreſſion of the ſun below the
at Thorn, lat. 53. North, Jan. 24, at ſix
evening—at Peterſburgh, lat. 60, Feb. 20,
in the evening—at Stockholm, lat. 59,
16, eight in the evening—at St. Auguſtine,
ida, lat. 30, April 2, nine in the evening—
thwold-Bay, lat. 52¼, May 28, ten in the

Adjuſt the globe for the ſun's place, and hour index, a of altitude on the zenith; th till the quadrant interſects th altitude; and the index will ſh night.

N. B. The time of the found by having a ſtar's azi of its altitude.

EXAMPL

What is the hour of the n January, at London, lat. 5 when the altitude of Sirius Anſ. Nine o'Clock in the eve morning.

Required the hour of the

uriga, 25°, 50°—September 17, altitude of *lbnaac*, in the South heel of Andromeda, 25°, , 65°—October 29, altitude of ε, near the belt Boötes, 30°—November 17, altitude of α in gnus, 77°—December 20, altitude of ε in the of Aquila, in the Milky-Way, 18°.

N. B. The Milky-Way is that long, white, inous tract, which ſeems to encompaſs the vens like a ſwath, ſcarf, or girdle; and which eaſily perceivable in a clear night, eſpecially en the moon does not appear.

Nor need we with a prying eye ſurvey
The diſtant ſkies to find the Milky-Way:
It forcibly obtrudes upon our ſight.

CREECH.

The Greeks call it Galaxy, on account of its lour and appearance. The Latins, for the ſame aſon, term it Via Lactea; and we the Milky-ay—

That milky-way,
Like to a circling zone powder'd with ſtars.

MILTON.

The ancient poets, and even philoſophers, ſpeak f the galaxy as the road or way by which the eroes went to heaven.

A way there is in heaven's extended plain
Which when the ſkies are clear is ſeen below,
And mortals, by the name of Milky, know:
The ground-work is of ſtars; thro' which the road
Lies open to great Jupiter's abode.

DRYDEN from OVID.

The

whole number conſtantly increa
in proportion to its apparent
naked-eye. That the Milky-W
by the confuſed light of an in
firſt aſſerted by Democritus *.

The Milky-Way may be tra
from Argo Navis, between C
Monoceros, then ſeparating Ta
afterwards paſſing through Auri
ſiopeia, Cephus, Cygnus, Ta
Scutum Sobieſki, Sagittarius, A
Robur Caroli, then reviſiting Ar

PROBLEM L

The Day of the Month being given
Hour any Star will be on th

Bring the ſun's place for the
the meridian, without regardin

the globe till the ſtar comes to the meri-
nd the index will point to the time re-

. The ſtar's right aſcenſion being ſub-
from the right aſcenſion of the ſun, the re-
:, reduced to time, ſhews how long the
nes to the meridian before the ſun: and
's right aſcenſion being taken from the
cenſion of the ſtar, exhibits the length of
ken by the ſtar to come to the meridian
e ſun.
Problem is uſed for directing what time
for any ſtar on the meridian, in order to
latitude of a place to adjuſt a clock, &c.

EXAMPLES.

hat time does α, *Vega*, in Lyra, come to
ridian on the 17th of Auguſt?—Anſ. About
quarters paſt eight in the evening.
what time does the brighteſt of the Pleiades
o the meridian on the 14th of September?—
About four in the morning.

uired the time when, on the following days,
nexed ſtars come to the meridian.
uary 31, α and β in Microſcopium*; α and
yxis Nauticus; α in Scorpio.
February

---

f the age; hence he has been ſtyled the "Sage of
." Often laughing at the follies of mankind, he has
ſo called the "Laughing philoſopher."—Heraclitus, a
ted natural philoſopher of Epheſus, has been denomi-
he "Weeping philoſopher, becauſe he frequently wept
vices and conſequent miſeries of mankind.

icroſcopium is a Southern conſtellation North of Indus.
oſcope is an optical inſtrument, by means of which

δ in Orion's Girdle; α in L
Noachi; β in Canis Major.

June 16, β in Hydra, near
δ in Corvus; β in Cruſcro, or
Canopus, in Argo Navis; β an

July 1, β *Albireo*, in the M
heads of Cygnus and Vulpe

very minute objects are repreſentec
viewed very diſtinctly, according t
or reflection:

> ———wh
> Reveals the wonders of mir

When, and by whom, microſcope
certainly known. Huygens tells u
Dutchman, had the firſt, in the year
reputed the inventor of it: though F
in 1646, claims the invention to hi
the year 1618. As a teleſcope invert
diſcovery might eaſily enough have ar

Aquila and Vulpecula; *α*, *β*, *γ*, in

17, *β Sheat*, *α Marhab*, and *γ* in Pe-
in the Left Horn of Aries; *χ* in the
Cetus; *α* in Eridanus, near Phœnix;
γ Bellatrix, in Orion.
5, *α Aldebaran* in the Face, and *β* in
n Horn of Taurus; *α Capella*, in Au-
Cor Leonis, or *Regulus*, in Leo; *χ* in the
Foot of Urſa Major.
, *α*, *β*, in Gemini; *γ* in the Body of
in the Arm of Virgo; *ε Alioth*, in the
rſa Major.
ber 3, *β* in the Beam of Libra; *δ* in the
of Boötes, near Corona Borealis; *β* in
of Urſa Minor; *α Antares*, in Scorpio;
xtremity of the Hair of Hercules.
er 18, *ε* in the Bow of Sagittarius; *β*
rehead of Capricornus; *α* in the Eye
δ Scheat, in the Right Leg of Aquarius;
bout the middle of the ſtring which
conſtellation Piſces.

PROBLEM LXIX.

what Day a given Star will come to the Meridian at any propoſed Hour.

he given ſtar to the meridian, and ſet
to the propoſed hour; then revolve the
the index points to twelve at noon*:

On what day does *Arcturus* come
at three in the morning ?—Anſ. M

On what day does *Cor Leonis*, o
to the meridian at eight in the
April 21.

Find on what days the follo
come to the meridian at the hours
β, γ, in Andromeda, one in t
Algol, in Caput Meduſa, two—α,
ſeus, three—β, in the Shoulder
to Lynx, four—Cor Caroli, fiv
the tail of Leo, ſix—γ and ε,
Draco, ſeven—the ſtars in the He
Lacerto, eight—the ſtars in the W
near Aries, nine—the ſtars in th
ten—the moſt Weſterly ſtar in
eleven—the ſtar in the Southern H
held by Hercules, noon—the ſtars

, in the South-Eaſt angle of Triangulum Auſtrale, even—*α*, *Fomalhaut*, in Piſcis Auſtralis, or Piſcis otius, midnight.

PROBLEM LXX.

he Latitude of a Place being given, to find the Point of the Ecliptic riſing or ſetting with any known Star.

Rectify the globe for the latitude of the pro-ſed place, and bring the given ſtar to the aſtern edge of the horizon; this will ſhew the oint of the ecliptic riſing at the ſame time; and ringing the ſtar to the Weſtern edge of the horion will exhibit the point of the ecliptic which ts along with it.

EXAMPLES.

What degree of the ecliptic riſes at London, t. 51°½ North, with Aldebaran?—Anſ. 18° of emini.

What degree of the ecliptic ſets at Rome, lat. 2°, with Rigel?—Anſ. 23° of Taurus.

What degree of the ecliptic riſes and ſets with e following ſtars at the annexed places?

Botany-Bay, lat. 34° South, *Fomalhaut*, in iſces Auſt.—Cape of Good Hope, lat. 34° South, *anopus*, in Argo Navis—Baldivia, lat. 39° South, *irius*, in Canis Major—St. Helena, lat. 16° South, *charnar*, in Eridanus, near the Phœnix—Peterſurgh. lat. 60° North, *Markab*, in Pegaſus's ing—Conſtantinople, lat. 41° North, *Vega*, in yra.

Of the Poetical Rising and Setting of the Stars.

Theſe are ſo denominated becauſe moſtly taken notice of by the poets *. They are the *coſmical*, *acronycal*, and *heliacal*. Moſt authors who treat on the doctrine of the Sphere mention them; but they are now chiefly uſeful in comparing and underſtanding paſſages in the ancient writers, though formerly they ſerved to diſtinguiſh particular ſeaſons of the year. Before the time of Julius Cæſar, the length of the civil year of the Romans, and many other nations, differed conſiderably from the period of the earth's revolution about the ſun; of courſe, the ſame day of the month did not always fall in the ſame ſeaſon of the year. On this account recourſe was had to other marks; and the riſings and ſettings of remarkable ſtars or conſtellations were employed for that purpoſe †; and

---

* They are, however, ſometimes mentioned by the ancient phyſicians and hiſtorians. Thus Hippocrates ſays, "One ought to obſerve the heliacal riſings and ſettings of the ſtars, eſpecially of the Dog-Star and Arcturus, alſo the coſmical ſetting of the Pleiades." And Polybius aſcribes the loſs of the Roman fleet in the firſt Punic War to the obſtinacy of the Conſuls, in not hearkening to their pilots, who diſſuaded them from putting to ſea at that ſeaſon of the year, which was between the riſing of Orion and the Dog-Star; it being always dangerous, and ſubject to ſtorms. See Orion, page 195.

† Thus the Egyptians and Ethiopians began their year at the riſing of Canicula, reckoning to its riſe again the next year, which is called the *Annus Canarius*, or Canicular Year. This year conſiſted ordinarily of 365 days, and every fourth year of 366, by which it was accommodated to the civil year.

e, at leaſt our almanack-makers, ſeem ſtill
ain ſomething of the ſame method in one
e, which is, in giving the name of Dog-
to about forty days of the year, in conſe-
e of the riſing of Sirius, or the Dog-Star.

Dies Caniculares, or Canicular-Days, are a
n number of days preceding and following
liacal riſing of Canicula, or the Dog Star,
morning. Their commencement is uſually
in the Calendars on the 3d of July, and
termination about the 11th of Auguſt;
his is a palpable miſtake, ſince the heliacal
of this ſtar does not now take place, at leaſt
r latitude, till near the latter-end of Auguſt;
in five or ſix thouſand years more, Canicula
chance to be charged with bringing froſt and
, as it will then, owing to the preceſſion
ie Equinoxes *, riſe in November or Decem-
, and he actually riſes with the ſun on different
, in different horizons: inſomuch indeed,

. The reaſon of their choice of Canicula before the
r ſtars to compute their time by, was not only its ſu-
r luſtre, being the brighteſt in the heavens, but becauſe
eliacal riſing was in Egypt a time of ſingular note, as
ng on the greateſt augmentation of the Nile, the re-
d father of Egypt. From the aſpect and colour of this
liant ſtar, the Egyptians, it is ſaid, drew prognoſtics
erning the riſe of the Nile, and alſo predicted the future
of the year; ſo that the firſt riſing of Canicula was
ually obſerved with great attention.

he Ethiopians, ſays an ingenious foreigner, having ob-
ed that the return of the inundation anſwered conſtantly
he appearance of a very beautiful ſtar towards the ſource of
Nile, which ſeemed to warn the huſbandman againſt being
riſed by the waters, compared this action with that of
animal which by barking gives notice of danger, and
d this ſtar the dog, that is, the barker.

* See pages 251, 252.

weather uſually experienced
and ſome authors even tell u
and Pliny, that the day he
wine turns ſour, dogs begin
bile increaſes and irritates, an
languid; and that the diſeaſ
ſioned in men by it, are burn
ries, and phrenzies.

Emerging from t
Refulgent Sirius lifts his golden
And ſhines terrific; for his burn
Taints the red air with fevers,
APOLLONIUS RHODI

Two eminent poets of our
alſo countenanced this deluſ
Sirius "The fervent dog adv
Addiſon remarks, that

All ſhun the raging dog-ſtar's
And from the half-unpeople

riſes with the propoſed ſtar, and ſeek in the
ar on the horizon what day of the month
des with it : that is, the day on which the
ſes coſmically. Bring the given ſtar to the
rn edge of the horizon, and obſerve what
e of the ecliptic riſes in the Eaſtern part;
the day of the month in the calendar which
ſponds with that degree, is the time when
ar *ſets coſmically*.

EXAMPLES.

hen does Menkar, in the mouth of Cetus,
and ſet coſmically at London, lat. 51°½ North?
nſ. June 1, and October 24.
gain—On what day does the brighteſt of the
iades riſe and ſet coſmically at London?—Anſ.
y 5, and November 23.

Required when the following ſtars riſe and ſet
ſmically at the annexed places:
The *Pointers*, in Urſa Major, at the Gallipagos,
t. 0—*Achernar*, in Eridanus; *Canopus*, in Argo
avis; *α*, in Centaurus; *ε*, in the Fore Foot of
epus, at the ſame iſlands—The ſtar in the Eye
f Anſer; *α*, in Caſſiopeia; *ε*, *Alioth*, in the Tail
f Urſa Major; at Owhyhee, lat. 19°—*Arcturus*,
n Boötes; *α*, in Scorpio; *Sirius*, in Canis Major;
t Madrid, lat. 40°—*α*, *Bet Elgueze*, in Orion;
, in Serpens, near Mons Menalus; *Procyon*, in
anis Minor; at Archangel, lat. 65°—*Alcair*, in
quila, at Peterſburgh, lat. 60°.

PROBLEM

A ſtar is ſaid to riſe or ſet acrony
riſing or ſetting happens at ſun-ſe
day in the calendar agreeing with
the ecliptic which ſets with the ſtar,
ſtar's acronycal ſetting: and the da
cides with the point in the eclipt
that which riſes with the ſtar, is t
the ſtar riſes acronycally.

Rectify the globe for the given
bring the propoſed ſtar to the *Eaſte*
horizon, and then obſerve what
ecliptic is in the *Weſtern* part of the
day in the calendar correſponding
will be the time when the given ſta
cally, or at ſun-ſet, and conſeque
begins to be *viſible in the evening*.
nycal ſetting, turn the globe abou
comes to the Weſtern verge of the
remark what degree of the ecliptic is
time ſetting with it; the day in

EXAMPLES.

hat days does the brighteſt of the ſeven e and ſet acronycally at London, lat. 51½? Riſes acronycally, Nov. 6; ſets acrony- lay 23; conſequently the Pleiades are viſible me part of every night during the inter- e months.

uired when the following ſtars riſe and ſet cally at London. centre ſtar in Orion's Girdle—γ, in the ex- y of the Wing of Pegaſus—β, in the Beam ra—α, in Scorpio—β, in Canis Major—α, *dra*, in Hydra—β, *Deneb*, in Leo—α, *Spica*, go—α, Menkar, in the mouth of Cetus— epus—the North ſtar in the Horn of Capri- —γ, in Corvus.

PROBLEM LXXIII.

d what Stars riſe and ſet acronycally on any particular Day in a given Latitude.

djuſt the globe to the propoſed latitude, and the ſun's place for the given day to the rn ſide of the horizon: all thoſe ſtars h are then on or near the *Eaſtern* ſide of the zon riſe acronycally; and thoſe which are at time on the Weſtern verge of the horizon cronycally.

EXAMPLES.

hat ſtars riſe acronycally Dec. 10, at London? nſ. The Hyades.

What

25—Nov. 17—Dec. 17.

PROBLEM LX

To determine the Time when a St
heliacally, at any given

The heliacal riſing is when a
merſed in the ſun's beams, emerg
and becomes viſible at the Eaſte
horizon, juſt before ſun-riſing; a
cally when it is at that period ſo
rays as to appear, for the laſt time
ing before it is entirely hidden and
ſpicuous.

The heliacal riſing and ſetting c
according to their different magni
evident, that the ſtronger the bril
is, the greater degree of the ſun
quired to render it inviſible whilſt

ve this Problem; rectify the globe for
ude, bring the given ſtar to the *Eaſtern*
e horizon, and, having fixed the quadrant
de to the zenith, turn it to the *Weſtern*
it interſects the ecliptic in the degree to
he ſtar's light requires the ſun to be de-
obſerve the point of the ecliptic which
cut by the quadrant; for the point of the
oppoſite to it will ſhew, by its corre-
g day in the calendar, when the ſtar riſes
ly.
g the ſtar to the *Weſtern* edge of the horizon,
quadrant to the *Eaſtern*, and notice the
of the ecliptic, as before; and the degree
ecliptic, which is oppoſite to it, will ſhew
calendar the time of the ſtar's ſetting he-
y.

EXAMPLES.

what day does Sirius, or the Dog-Star, riſe
ally at London; and on what day does it
liacally at the ſame place?
ſ. Riſes heliacally on Auguſt 23; and ſets
cally on May 2.

equired the days on which the following ſtars
and ſet heliacally at London:
igel, in Orion's Heel—*Procyon*, in Canis Minor
ldebaran, in Taurus—*Cor Scorpionis*, in Scorpio
pica, in Virgo—*Arcturus*, in Boötes—*Cor*
dra, in Hydra—*Alcair*, in Aquila—*Caſtor*, in
mini—the *Pleiades*, in Taurus—*Deneb*, in Leo
Markab, in Pegaſus.

PROBLEM

ſerve what degree of the eclipt
meridian with it; find the corr
the month in the calendar, and
ſolved.

EXAMPLES.

When does Cor Hydra come t
with the Sun—Anſ. Auguſt 9.

Required the days on which th
come to the meridian with the ſun.
ε, in the mouth of Pegaſus—γ,
β, in Andromeda—γ, in the Ear
Caput Meduſa—γ, in Urſa Major—
of Boötes—ε, in the North Win
Corona Borealis—α, in Delphinu
Major—β, in Canis Minor.

PROBLEM LX

EXAMPLES.

en will the ſtar in the tip of the Tail of Urſa be on the meridian at midnight?—Anſ. 16.

uired when the following ſtars will be upon eridian at midnight.
in the Shoulder of Auriga—β, in the Tail tus—β, in Aries—γ, in Orion—γ, in the of Lepus—α, Regulus, or Cor Leonis, in β, in the North Horn of Taurus—ι, in arius—β, in Piſcis Auſt—β, in Xiphias—β, cis Volans—the North Star in Cruſero.

PROBLEM LXXVII.

iven Latitude, Day of the Month, and Hour of Night, to find the Altitude and Azimuth of a poſed Star. See Defin. 8, 9, pages 248, 249.

ctify the globe for the given latitude, and f the month at noon; revolve the globe till ndex points to the propoſed hour; fix the ant of altitude on the zenith, and move it to iven ſtar, whoſe azimuth will then appear on orizon, and its altitude on the edge of the rant.

EXAMPLES.

hat are the altitude and azimuth of Cor is, at London, on May 11, at eleven o'clock ight?

Anſ.

ε, near the Neck of Androm
at five o'clock in the evening—
of Pegaſus, February 3, at ſi
March 24, at ſeven—ε, in th
April 8, at eight—ε, in the Hea
at nine—ε, in Cancer, near the
June 17, at ſeven—ε, in the Ta
21, at ten—ε, in the Back of th
Auguſt 1, at eleven—ε in the
September 28, at midnight—ε, i
Lepus, October 23, at one—β,
Canis Major, November 14, a
Tail of Urſa Major, three o'cloc

PROBLEM L

From the obſerved Altitude of a
Hour of the Night in a given
and in a known Latitude.

Rectify the globe for the give

This Problem being the direct converſe , the pupil may make uſe of the ſtars ıerated, having previouſly obtained their altitudes on the days and hours men- ı the manner of the above example.

ROBLEM LXXIX.

obſerved Hour and Minute of a Star's or ſetting on a given Day, to find the le of the Place.

r the globe to the given day at noon, and oout till the index points preciſely to the ne, when, keeping it ſteady, let the me- moved up and down in the notches of zon till the given ſtar begins to emerge ; then will the degrees of the meridian ed by the North part of the horizon, ſhew *ation of the Pole*, and conſequently the of the place. See Art. 25, page 23.

EXAMPLES.

ıſe on the 11th of May, at four o'clock in ning, the brighteſt ſtar in Caput Meduſæ en riſing, what would be the latitude? About 28 degrees North.

ired the latitude of the places where the ng ſtars riſe at the hours and on the days l to them:

l, in Orion, January 21, ſeven in the even- ırcturus, in Boötes, February 16, at eight— Draco, March 14, at nine—α, in Lyra, 1, at ten—α, in the wing of Pegaſus, May at ſix o'clock in the morning.

PROBLEM L

From an Obſervation of two known
the ſame Azimuth in a given Lati
Hour of the Night.

Rectify the globe for the lat
place at noon of the given day;
and quadrant till the edge of the
ciſely over both the given ſtars;
index point to the hour of the nig

EXAMPLES.

Suppoſe on the 11th of May,
51½, *Vega* in Lyra, and *Alcair* i
obſerved to have the ſame azimut
be the hour?—Anſ. About half

, April 9—α, in Cygnus, and α in Pegaſus,
—ε, in the Head of Cepheus, and α, in
n of Aries, June 22—γ, in the Arm of
and β, in the North Horn of Taurus,
—ε, in the Goat in Auriga, and *Procyon*, in
linor, Auguſt 20—α, *Betelgueze*, in Orion,
ius in Canis Major, September 4—α, in the
Cepheus, and γ, in the Heel of Andro-
ctober 16—α, *Cor Leonis*, and α, in Crater,
ber 15—α, in the Head of Caſtor, and α,
dræ, December 13.

PROBLEM LXXXI.

an Obſervation of two known Stars having
ſame Altitude on a given Day, to find the
r of the Night.

tify the globe to the given latitude and day
month at noon; revolve the globe until
me degree of the quadrant of altitude cor-
ds with each of the propoſed ſtars, then will
dex ſhew the hour of the night.

EXAMPLES.

poſe on the 11th of May, at London, lat.
the bright ſtar (α) in the wing of Pegaſus,
hat in the head of Andromeda, were obſerved
ve an equal altitude, what would be the hour?
ſ. About ¼ paſt 2 in the morning.

quired the time of the night at London when
bjoined ſtars have the ſame altitude on the
ked days:

α, in the Mouth of Cetus, and Aldeba
Taurus, January 1—*Procyon*, in Canis Minor,
ε, in the Head of Leo, February 20—*Capell*
Auriga, and α, in Caſtor, March 27—the *Pl*
in Taurus, and *Bellatrix*, in Orion, April
α, in Caſtor, and *Cor Leonis*, May 22—*Arct*
in Boötes, and ε, in Serpens, June 19—
Pegaſus, and α, in Perſeus, July 10—*Betelg*
in Orion, and β, in Pollux, Auguſt 17—
Lyra, and α, in Pegaſus, September 13—α,
Horn of Aries, and Capella, October 15—
Orion's Heel, and β, in the Fore Foot of
Major, November 20—α, in the Head of Sa
tarius, and α, in Cygnus, December 18.

PROBLEM LXXXII.

From an Obſervation of a known Star on the
dian, and another in the Eaſt or Weſt Part
Horizon, to find the Latitude of the Place.

Bring the ſtar that was obſerved on the me
of the place to the meridian of the globe,
keep the globe from moving round its
then ſlide the globe up or down in the no
till the other ſtar comes in contact with th
or Weſt part of the horizon, and that *elevat*
the pole will ſhew the *latitude of the place.*
Art. 25, page 23.

EXAMPLES.

Suppoſe Sirius were obſerved to be upo
meridian, when Arcturus coincided with th
ſtern part of the horizon, what would b
lat

of the place of obſervation?—Anſ. About
;. North.

red the latitudes where the under-mentioned
ve the following ſituations:
', in Orion, on the meridian; *β*, in the
Leo, in the Eaſtern part of the horizon—
on the meridian; *ε*, in the Tail of Urſa
Eaſtern part of the horizon—*Cor Leonis*,
meridian; *α*, in Lyra, Eaſtern part of the
n—*α*, in Aquila, on the meridian; *Aldeba-*
n Taurus, Eaſtern part of the horizon—
r, on the meridian; *Arcturus*, Eaſtern part
horizon—*Arcturus*, on the meridian; *α*, in
s, Eaſtern part of the horizon—the *Pointers*,
ι, and *β*, in Urſa Major, on the meridian;
in the Weſtern part of the horizon—*Ca-*
in Auriga, on the meridian; *Alcair*, in
a, Weſtern part of the horizon—*Betelgueze*,
on, on the meridian; *α*, in the Wing of
us, Weſtern part of the horizon—*ε*, in Cro-
on the meridian; *α*, in Lyra, Eaſtern part of
orizon—*α*, in the mouth of Cetus, on the
lian; *Cor Leonis*, Eaſtern part of the horizon.

PROBLEM LXXXIII.

the obſerved Altitude of two Stars on a given Azimuth, to find the Latitude of the Place.

t the quadrant over both ſtars of the obſerved
ees of altitude, and there keep it from mov-
then ſlide the meridian up or down in the
es till the quadrant cuts the given azimuth
e horizon; the elevation of the pole in that
ion of the globe will be the latitude required.

EXAMPLES.

EXAMPLES.

Suppoſe the altitude of Cor Hydræ were obſerved to be five degrees, that of Procyon 8 and their azimuth 78 degrees South-Eaſt, wh would be the latitude of the place?—Anſ. degrees North.

Required the latitude of a place where th altitude of Procyon was obſerved to be ten degree that of Betelgueze 37, and their azimuth o degrees from the Eaſt, Northerly—Aldebaran, 9 degrees; *α*, in Aries, 45; and their azimuth 1 degrees from the Eaſt, Northerly.

PROBLEM LXXXIV.

To find the perpetual Apparition or Occultation of the Stars in a given Latitude.

Rectify the globe to the latitude of the place; turn it a complete rotation on its axis; then all thoſe ſtars which continue above the horizon during its revolution, are of perpetual apparition in that latitude; and thoſe which remain below are of perpetual occultation, or inviſible. By inſpecting the globe it will moreover be immediately evident, that thoſe ſtars whoſe declinations exceed the co-latitude (*i. e.* what it wants of 90 degrees) will always be above the horizon; and that all thoſe in the oppoſite hemiſphere, whoſe declinations are greater than the co-latitude, will ever continue below the horizon.

EXAMPLES.

EXAMPLES.

s and conſtellations are continually ɪrizon of London, lat. 51½ North?
a Major—Capella, in Auriga—Vega, raco—Urſa Minor—Caſſiopeia—Ce- ı Cygnus—Lynx—Almaac, in Andro- &c.

rs and conſtellations are perpetually horizon of London, and conſequently its inhabitants?
e horſe-part of Centaurus—Ara—Cro- n—Acharnar, in Eridanus—Canopus, Navis—Apus—Pavo—Robur Caroli— ıs—Phœnix, &c. &c. &c.

ROBLEM LXXXV.

the Face of the Heavens on the Globe en Hour of the Night, at any propoſed he Year, in a given Latitude.

he globe to the given latitude and day h at noon, ſetting it alſo due North ɪy the needle*; turn the globe on its index points to the propoſed hour of then all the upper hemiſphere of the repreſent the viſible face of the heavens me; by which it will be eaſily ſeen ellations and ſtars of note are then horizon, and what poſition they have t to the points of the compaſs. In this caſe, ſuppoſing the eye were placed in the ce of the globe, and perforations were made thro the ſtars on its ſurface, the eye would perce by means of thoſe apertures, the various c ſponding ſtars in the firmament; and hen would be eaſy to know the ſeveral conſtell at ſight, and to deſignate the principal ſtars by names.

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* See the note, page 42.

The uſe of this Problem, therefore, is moſt ex five, as it acquaints us at any time with the app face of the celeſtial regions, and ſhews us the moon, or any of the planets, may be or are in a ſituation for examination by a teleſ Hence alſo we may learn when any of thoſe rious and wonderful objects, called *nebulous ſtar* may be ſeen, which ſtrike the mind of the ſerver with amazement, by preſenting to ſight an indefinite number of the ſmalleſt fixe ſtars through the whole field of view in his tele ſcope. Hence, moreover, the poſition of th very extraordinary phenomenon, called the Milky Way †, is at any time known. This ſingle pro blem, therefore, may be conſidered, in itſelf, ſufficient to recommend the uſe of the Celeſti Globe to every ſtudious and rational mind, as or of the moſt neceſſary inſtruments for acquiring knowledge of the Heavens.

There dwells a noble pathos in the ſkies,
Which warms our paſſions, proſelytes our hearts.
How eloquently ſhines the glowing pole!
With what authority it gives its charge,
Remonſtrating great truths in ſtyle ſublime.

YOUN

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* See page 111. † See page 271.

EXAMPLES

EXAMPLES.

ions of the fixed ſtars, on the 9th of
London, lat. 51°$\frac{1}{2}$, at nine in the
l be nearly as follow:
the Dog-Star, will be on the meri-
itude twenty-two degrees—Procyon,
ıor, ſixteen degrees towards the Eaſt,
forty-three degrees—About twenty-
above Procyon, and ſomewhat more
the twins, Caſtor and Pollux—Sixty-
from the South toward the Eaſt, and
legrees in height, is the bright ſtar
Cor Leonis—Exactly in the Eaſt, and
degrees in height, is the ſtar Deneb,
s Tail—Thirty degrees from the Eaſt
North, and three degrees above the
Arcturus, in the conſtellation Boötes—
this laſt, and thirty-one degrees above
, is Cor Caroli—In the North-Eaſt
r in the extremity of the Great Bear's
ı, the firſt ſtar in the Tail, and Dubhe,
ımoſt pointer *. The altitude of the
: is thirty degrees; that of the ſecond,
grees; and that of the third, fifty-ſix
rty-nine degrees from the Eaſt towards

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hindmoſt ſtars, namely, α and β in Charles's
ı Major, are called "The Pointers," becauſe
ırough them will conduct the eye nearly to the
t, in Urſa Minor. Round this ſtar the others
ı hemiſphere appear to revolve, and by it the
tors ſteered the courſe of their veſſels; they
ıted with the uſe of the compaſs, which was
leaſt in Europe, till about the year 1303. See
ueſtions, Art. Navigation; and pages 80 and

forty-five degrees above the horizon
in the conſtellation Taurus—A line j
and Sirius paſſes a very little abov
the middle ſtar in which is equall
each—A little to the Weſt of Ald
Hyades *; and in the Neck of Tauru
—In the Weſt by South point is C
riga, its altitude ſeventy-three de
North-Weſt, and about forty degre
conſtellation Caſſiopeia. Near this
conſtellations Cepheus, Andromed
duſæ, &c.—And almoſt in the Nort
to the horizon, is the conſtellation

Now let us watch the riſing of the
And look where mid December point
Moſt apt for contemplation of the ſce
The fourth from noon is paſs'd, and
Fled to the fifth: in the meridian vie
Cepheus, ſublime; the Dragon's torti
Where ſhines to Britain's great metro

goal, with languid ray appears
igh to the direct of Eaſt,
iſen: nor prevails
even now to eclipſe the pomp
conſtellation; his right ſide
tar, which lightens on the left,
w upon our hemiſphere:
n the vaſt Whale conſpicuous ſhines.
ur is elaps'd, Orion ſhews
belt; the Twins are wholly riſen;
on appears! and now the Crown
riſes: Charles, thy Star,
ver ſetting to the horizon, ſtoops.
Crab the far diſtinguiſh'd light
Little later than the ſeventh,
ars: the ninth the Lion ſhines;
vertex is Meduſa ſeen.
enth hour from noon Hydra appears
: at mid of night Orion's form
eridian; but the Whale retires;
it Lyra meets the horizon's bound;
n form ſhows her aſcendant wing;
the zenith glows; an hour
rcturus riſes: ere the night
'd the ſecond hour from its mid ſpace,
full beam the great NEWTONIAN *Star* *.
h approaches, when the golden ſtar
gains the eye: the ſails retire
ſplendent Ship; her lucid maſt
inent. The ſixth her fetter'd arm
da diſcovers; and the heart
io riſes; Hydra fills the Weſt;

Virginis, the ear of wheat in the conſtellation .

The ſtar which crowns the golden ſheaf,
vants a name, O glory of the ſkies!
hall not juſtice dignify thy ſphere
the great name of NEWTON? Be at leaſt
e for ever the *Newtonian Star*. EUDOSIA.

Meduſa's Head ſinks, and Orion bears
With difficulty his ſhoulders unſubmerg'
Monoceros ſucceeds. Why ſhould I na
The Snake or Serpentarius fully riſen?
Or why repeat the wonders which before
Engag'd our eye? The great and ſmaller
With the Camelopard and varied Lynx!
Or gaze on thee, O Perſeus! thee admir
Aquila; or the Lyre, which re-aſcends?
But, riſing Eaſtward, beams the glorious
Of the pure Galaxy! And now appears
Urania's Sextant, and perſuades to leave
The ſtarry theatre, and yield to dawn:
For now Aurora's fiery courſers gild
The froſty ſummit of the Eaſtern hills.
All this delightful ſcene revolving earth
Produces, viſiting the ſeveral ſtars;
While undiſturb'd remain the heavenly ſ

Required the face of the heavens at the following days and hours.

January 1, five in the evening—Fe ſix—March 8, ſeven—April 8, eight nine—June 8, ten—July 6, eleven— midnight—September 16, one in the October 12, two—November 26, thre ber 14, four in the morning.

PROBLEM LXXX

To ſhew the Correſpondence between the C Terreſtrial Regions, as delineated in th Poem EUDOSIA.

Rectify both globes for the latitude o bring the 18th degree of right aſcenſi

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* See Axis, page 5.

zen meridians, and place both globes
oſition with reſpect to the cardinal
heavens.

hen the bright ſtar, which marks the ſide
ale, ſtands in the meridian height,
aſcenſion of twice nine degrees,
Beak to the Gulph of Mexico
ical in Weſt; the lucid beam
rks her-wing, to the Canadian lake,
meridian; and the light, which notes
extreme, from the proud Zenith views
and's hardy ſons; Cepheus, thy ſide
s-Bay beyond Daviſian ſtreights,
ſtward of the Cape of Hope, obſerves
ſpondence: the full piercing ray,
rts effulgent from the ſouthern Fiſh,
rtical midſt the Atlantic ſea:
the Eaſt Andromeda beholds
ic and Sardinian coaſt beneath
t foot: thy ſhoulder, Perſeus,
er Lithuania beams, the mouth
Vhale threatens o'er the Golden Coaſt
; ſuch the diſtance from her ſide
nate: the Pleiades behold
ian borders, and thy frontier ſtream,
The foot of Pollux points the mines
olconda, the imperial ſource
ic gems: while Procyon,
Meridian, flaſhes on the coaſt
tra. Thus the Geography
ur globe, illuſtriouſly mark'd,
the eye inform'd amid the ſtars:
the order of celeſtial ſpheres

Bring the given ſtar to the b
note its declination ; then ſeek
latitude, either North or South
globe, and revolve this laſt a co
the places which, during this op
the degree of latitude above-me
required.

EXAMPL

What places do the Pleiades in
paſs over ?—Anſ. Nearly over
Canton, Formoſa, and Provide
are all either within, or on th
torrid zone*.

---

* The elegant Addiſon has been ſe
cenſured for an unlucky miſtake conce
introduced in the following lines :

Nor at the coarſeneſs of our heaven

s, diſtricts, or countries, do the fol-
paſs over?
ern ſtar in the girdle of Orion; Rigel,
el; Aldebaran, in Taurus; Sirius, in
; Procyon, in Canis Minor; Arcturus,
, in Lyra; Capella, in Auriga; γ, in
Draco; γ, in the wing of Pegaſus;
Auſt. β, in the right arm of Hercules.

OF THE MOON.

n, (Luna ☾) in aſtronomy, is one of
y bodies, uſually ranked among the
t with more propriety accounted a
ſecondary planet.
e ancients, this "refulgent lamp of
an object of prime reſpect. By the
was more regarded than the ſun,
re more inclined to worſhip her as a
new moon, or firſt days of every
e obſerved as feſtivals among them,
celebrated with ſound of trumpets,
ts, and ſacrifice. See Numbers
1 Samuel xx. 5—18. The moon
ddeſs of the Phœnicians, whom they
nder the name Aſhtoreth, or Aſtarte.
ſometimes ſtyled the queen of heaven,
and xliv. 17, 18. She is likewiſe
ddeſs of the Zidonians, 1 Kings xi. 5.
mination of the Zidonians, 2 Kings
; ſhe was worſhipped very much in
lon, a famous city of the Phœnicians,
ſituated

ſituated upon the eaſtern coaſt of the Mediterra
Solomon, who had many wives that were for
ers, was prevailed upon by them to introduc
worſhip of this goddeſs into Iſrael, 1 Kings x
and he built her a temple on the mount of Ol
which on account of this and other idols is c
the mountain of corruption, 2 Kings xxiii. 13
by Milton, *the offenſive mountain*, and *that o*
brious hill, and *that hill of ſcandal*:

> There ſtood
> Her temple on th' offenſive mountain, built
> By that uxorious king, whoſe heart, though lar
> Beguil'd by fair idolatreſſes, fell
> To idols foul.
>
> Mil

The full moon was held favourable fo
undertaking by the Spartans; and no motives
induce them to enter upon an expedition, mar
army, or attack an enemy, till the full o
moon. The Athenians, it appears from Plut
had very terrific ideas of eclipſes of the m
ſince Nicias and his army, when they were
to withdraw ſecretly from Sicily, without
obſerved or ſuſpected by the enemy, refuſ
embark, becauſe the moon became ſuddenly ec
in the dead of the night; and this ignora
ſuperſtitious conduct proved fatal to that h
commander and his brave companions, who
all ſhortly after either ſlain or taken priſoner

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* A knowledge of the operations of nature is o
vaſt importance in carrying on great enterpriſes.
Alexander the Great's admiral, Nearchus, and his me
ſaw the flux and reflux of the ſea at the mouth of th
Indus, the phenomenon appeared to them a prodigy, by
the gods teſtified the diſpleaſure of heaven againſt the

e moon was ſuppoſed, both by the Greeks Romans, to preſide over child-birth. The r doctrine concerning the influence of the on the changes of the weather is very an-, and has gained credit among the learned out examination; but it ſeems now to be y generally exploded by philoſophers, as ly deſtitute of all foundation in phyſical y, and unſupported by any plauſible analogy. e famous Dr. Mead was a believer in the ence of the moon on the human body; but opinion has been controverted by many ent philoſophers, as equally unreaſonable in f, and contrary to fact. They contend, that e moſt accurate and ſenſible barometer* is not affected

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in which they were then embarked †. When Cæſar's , on their landing on the coaſt of Britain, ſaw the ſea ig and retiring from their ſhips, they took it for a ſtra- n of their enemies, gave themſelves up for loſt, and were ighted and confounded, that the courage and conduct of great commander could ſcarcely prevent their overthrow. Rapin's Hiſt. of Eng. vol. v. p. 410. 8vo. edit.

A Barometer is a machine for meaſuring the weight of atmoſphere, and the variations in it, in order chiefly to rmine the changes of the weather. It differs from the ſcope, which only ſhews that the air is heavier at one than another, without ſpecifying the difference. The meter is founded upon the Torricellian experiment, ſo ed from Torricelli, the inventor of it, at Florence, in 3. It is a glaſs tube filled with mercury, hermetically ed at one end; the other open, and emerged in a baſon agnant mercury. Now, as the weight of the atmoſphere iniſhes, the mercury in the tube will deſcend; and as it eaſes, the mercury will again aſcend: the column of the l thus ſuſpended in the tube, being always equal to the ght of the incumbent atmoſphere. The meaſuring the hts of mountains, and finding the elevation of places

See Robertſon's Hiſt. of Amer. vol. i. p. 17. 8vo edit. 1777.

the conſideration of the moon’
on the ocean, in occaſioning th

The moon turns Ocean in his
From ſide to ſide, in conſtant
And purifies from ſtench his w

The Queen of Night, whoſe l
Rules all the ſea and half the l
And over moiſt and crazy * bra
In high ſpring tides † at midni

above the level of the ſea, has alſo be
barometrical experiments, founded up
perty of the air, its gravity or preſſure.

Mercury is the chemiſt’s name fo
ponderous volatile fluid mineral, hard t
by Milton “ volatil Hermes,” which
Mercury *. It is found in the mine
Peru, the Eaſt and Weſt-Indies, and p
the Venetian territories, whence the gr
ſilver is brought.

on, as we have juſt obſerved, is not a lanet, but only a ſatellite, or attendant rth, round which it revolves, and with is carried round the ſun. Her mean diſ- om the earth is about 240,000 miles; ntricity 13,000, and the inclination of t to the plane of the ecliptic nearly 5° 18′; neter about 2180 miles; her bulk equal ieth part of the earth; and ſhe revolves ner axis exactly in the ſame time that ſhe ound the earth, which is the reaſon of her keeping the ſame ſide towards us; hence abitants have but one day and night in the of a month. Her axis being almoſt per- cular to the ecliptic, ſhe has ſcarcely any ence of ſeaſons.

e cauſe of moſt of the very numerous and rent appearances of the moon is, that ſhe is rk, opaque, and ſpherical body, and only ſhines h the light that ſhe receives from the ſun.

The neighbouring moon her monthly round
till ending, ſtill renewing, through mid heaven,
With borrowed light her countenance triform*
Hence fills and empties to enlighten th'earth,
And in her pale dominion checks the night.
MILTON.

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higher than at other times, and are called *ſpring tides*; when the ſun and moon are 90 degrees apart, their active powers are oppoſed, and occaſion the tides to be ker and lower than at other times, and theſe are called *tides*. The word neap is derived from the Saxon; it ifies low, decreſcent, and is uſed only of the tide — Iſaac Newton calculated the attractive powers of the ſun moon on the tides, and found the attraction of the latter e about three times greater than that of the former.

Increaſing with horns towards the Eaſt; decreaſing with s towards the Weſt; and at the full.
NEWTON'S MILTON.

regard to the ſun and earth, we degrees of illumination; ſometi ſometimes a leſs portion of the face being viſible.

When the moon is in conjuncti *i. e.* between this luminary an diſappears, becauſe her unenlight toward the earth, and ſhe is calle when ſhe is in oppoſition to th ſhe has proceeded through half he pears full, becauſe her whole il then toward the earth, and ſhe Moon; when ſhe is in her quadrat half full, becauſe only one half o ſide is then toward the earth. her quadratures ſhe has all the p phaſes between a thin circular lin according to her ſituation with re The points of the circular line, w before and after the conjunction erm is alſo uſed for the ſame figure n her wane, or decreaſe, but im-auſe the points or horns are then ls the Weſt, whereas they look to e juſt creſcent *.

ſun and the moon are in oppoſite eavens, the latter riſes in the Eaſt, ſets in the Weſt.

> n ſun withdraws.—Meanwhile the moon,
> ind breaking thro' the ſcatter'd clouds,
> oad viſage in the crimſon'd Eaſt.
>
> THOMSON.

ew to the full moon, the illuminated l toward the Weſt, becauſe the ſun vard of it; but from the full to the t is turned to the Eaſt, the ſun being l of it.

which the moon takes to revolve it of the heavens to the ſame again, *iderial,* or *periodical revolution*; and lifferent from the period ſhe takes to the ſun to the ſame apparent ſituation o the ſun again, which is denominated *revolution.* The former revolution in about 27 days 7½ hours; and the ly 29 days 12½ hours.

ns of the hour and minute hands of a erve to give ſome idea of the periodi- odical revolutions of the moon; for nute hand has performed a complete t has yet ſome diſtance to go to ob- g with the hour hand, ſimilar to that with it the preceding hour.

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* See page 81.

When the moon is viewed through a g telescope, there appear vaſt cavities and aſper upon various parts of her face, ſome of them tremely reſembling deep caverns and valleys, others mountains—

> Turn'd to the ſun direct, her ſpotted diſk
> Shows mountains riſe, umbrageous dales deſce
> And caverns deep, as optic tube deſcries.
>
> Thoms

The cavities, it is conjectured, do not con water; hence it is concluded that there can b extenſive ſeas and oceans, like thoſe which c a great part of our earth. It is, however, i gined that there may be ſprings and ſmall ri With regard to a lunar atmoſphere, the exiſt of which has been long a ſubject of much diſp a variety of proofs have been recently addu by an ingenious foreigner, in ſupport of the a mative ſide of the queſtion.

Though the moon is not adapted to Be organized as we are, yet there can be l doubt but ſhe, like the other parts of the ſ ſyſtem, is peopled with intelligent agents, en with bodily conſtitutions ſuitable to the na and economy of the planet for which they deſtined. Be this, however, as it may, the dom and beneficence of the Deity to man are conſpicuous in the appointment of this atten on the earth, the uſe of which is particu experienced in the winter, the moon being r longer above the horizon, when moſt enlighte in that ſeaſon, than in the ſummer; for at the of her being full ſhe always moves, as we before remarked, in a part of the zodiac opp to the ſun, and conſequently deſcribes nearly circle of diurnal motion when at the full in nber as the ſun does in June. The advan- of the harveſt moon to the induſtrious ndman are alſo very remarkable. In a word, EITY has ſo ordered the courſe of this ſatel- as to beſtow more or leſs light on all parts e earth, as their ſeveral circumſtances and ns render it more or leſs ſerviceable. See p. 16. hat a celeſtial object, thus beneficial and inte- ng to us, ſhould attract the notice of the poets, nt naturally be expected; accordingly, we find the bards of ancient and modern times have, r the appellations of Cynthia, Cyllene, Phœbe, er Queen of Night, Queen of the Silver Bow, Planet of the Night, Mute Arbitreſs of the es, &c. &c. been laviſh in the praiſes of her ity, and the utility ſhe is of to mankind. ong the numerous pleaſing efforts of this ſort, ſubſequent pretty lines of an anonymous writer l not, we apprehend, be thought undeſerving notice of our young readers.

Siſter of Phœbus*, gentle queen,
Of aſpect mild, and ray ſerene,
Whoſe friendly beams by night appear,
The lonely traveller to cheer†!

Attractive pow'r! whoſe mighty ſway
The Ocean's ſwelling waves obey,
And, mounting upward, ſeem to raiſe
A liquid altar to thy praiſe.

A name in poetic language given to Apollo, or the ſun. word expreſſes the brightneſs and ſplendor of that inary.

† Fair moon,
That wont'ſt to love the traveller's benizon.
MILTON.

The effect of a moon-light evening is exquiſit grand and majeſtic; it is the "world's g picture," not indeed in the lively colours day, but more delicately ſhaded, and arraye ſofter charms.

> Now reigns
> Full orb'd the moon, and with more pleaſing ligh
> Shadowy ſets off the face of things.
>
> MILT

Homer, according to Pope, has exhibited, in following lines, the fineſt *night piece* in poet and, as Hervey juſtly remarks, if they are beautiful in the original, who can ſuſpect th ſuffering any diſadvantage from the pen of admirable tranſlator?

> As when the moon, refulgent lamp of night,
> O'er heav'n's clear azure ſpreads her ſacred light;
> When not a breath diſturbs the deep ſerene,
> And not a cloud o'ercaſts the ſolemn ſcene:
> Around her throne the vivid planets roll,
> And ſtars unnumber'd gild the glowing pole;
> O'er the dark trees a yellower verdure ſhed,
> And tip with ſilver ev'ry mountain's head;
> Then ſhine the vales; the rocks in proſpect riſe;
> A flood of glory burſts from all the ſkies;
> The conſcious ſwains, rejoicing in the ſight,
> Eye the blue vault, and bleſs the uſeful light.
>
> ILIAD V.

PROBLEM LXXXVIII.

To prepare the Globe for ſolving ſome of the ſ ſequent Lunar Problems.

Faſten a ſilken line over the ſurface of the glo exactly on the ecliptic. This may be afterwa

remo

wards the North or South, juſt equal
ude of the moon's orbit or path in the
nd the points of interſection with the
alled the Nodes, will be ſuch as the
the ephemeris aſſigns for every ſixth
year.

point of interſection, or node, of the
it, in which ſhe aſcends from the Southern
Northern part, is called the Aſcending
r ſometimes the Dragon's-Head, and is
iſhed by this character ☊ ; and the other
or Dragon's-Tail, is repreſented by the
aracter inverted thus ☋. This laſt node
noticed in the ephemeris, becauſe the place
being given, the ſituation of the other is
diately known, being diametrically oppoſite
. Thus, for inſtance, if on any particular
he place of the aſcending node were found to
a certain degree of Taurus, the deſcending
would be in the ſame degree of the oppoſite
, Scorpio. See page 39.

y inſpecting the ephemeris it will appear, that
motion of the lunar nodes through the ſigns
he ecliptic is ſo extremely ſlow, as to alter but
little in the ſpace of a month. They move
about 19 degrees in a year, and of courſe
almoſt 19 years to make an entire revolution
ugh the ecliptic. This motion is retrograde,
as it is ſometimes termed, *in antecedentia*, *i. e.*
trary to the order of the ſigns: thus the aſ-
ling node for January the firſt of the year 1797,
1° 12' of Cancer; and for December the 25th,
14' of Gemini. See White's Ephemeris.

PROBLEM

PROBLEM LXXXIX.

To find the Nodes of the Moon's Orbit for any Time, by the Ephemeris and Globe.

Seek the moon's aſcending node in the tab geocentric motions of the planets in the e meris, where there is a column which ſhews ſign, degree, and minutes of the place of node for every ſixth day. Bring the correſpon part of the ecliptic upon the globe to the br meridian; turn the globe preciſely half a rev tion, reckoned by the hour circle, and the de of the ecliptic then in contact with the meri is the moon's deſcending node.

EXAMPLES.

The moon's aſcending node on the 19t October of the year 1797 was 15° 47′ of Gen what was her deſcending node?

Anſ. 15° 47′ of Sagittarius.

Required the moon's aſcending nodes for following days, and the correſponding deſcen nodes:

January 1—February 7—March 8—April May 3—June 3—July 1—Auguſt 1—Septemb —October 17—November 1—December 1.

PROBLEM XC.

To aſſign the Orbit of the Moon its proper Po in the Heavens for any Time.

Having found the moon's nodes by the prece Problem, confine the ſilk line mentioned in

Problem, at theſe Points ; and at 90 degrees them, reckoned upon the ecliptic, elevate depreſs the line to the moon's greateſt lati- . namely, about 5¼ degrees on either ſide of cliptic.

eſe diſtances are eaſily determined by the es of latitude which paſs through every degree the ecliptic to the extent of the zodiac ; and ſilk line in this poſition will repreſent the r orbit, or path, in the heavens for the pro- d day.

PROBLEM XCI.

find the Moon's diurnal Motion in the Ecliptic for any given Day.

The quantity of the moon's diurnal motion for y day is obtained by taking the difference be- ween it and that of the preceding day, thus: d her place, *i. e.* her longitude for the noon of he given day in the ephemeris, and ſubtract from t her place on the foregoing day at noon; the ifference of theſe longitudes will be the ſpace that he has deſcribed for that day, and is the quantity f the diurnal motion required. For example, let er diurnal motion be required for the 11th of May 1797.

n the 11th of May her place was ....♏ 28° 5′
n the 10th of May ....♏ 15 18

The diurnal motion ſought— 12 47

N. B. The moon's diurnal motion varies from bout 11 deg. 46 min. the leaſt, to 15 deg. 16 in. when greateſt.

EXAMPLES.

EXAMPLES.

Required the moon's diurnal motion for the following days:

January 1—February 7—March 8—April 1—May 3—June 3—July 1—Auguſt 1—September —October 17—November 1—December 1.

PROBLEM XCII.

To find the Moon's Place in the Ecliptic for any given Hour of the Day.

Find, by the ephemeris, the moon's place in the ecliptic for the given day at noon; and, by the laſt Problem, the ſpace ſhe has deſcribed ſince noon, to the given time: this, added to the former, will be her place in the ecliptic, at the hour required. Thus, on the 10th of May her place at noon was 15 deg. 18 min. of ♏, and as her diurnal motion for that day was 12 deg. 47 min. in nine hours ſhe will have paſſed over 4 deg. 47 min.* which, added to her place at noon, will give 20 deg. 5 min. of ♏ for her place on the 10th of May, at 9 o'clock at night.

EXAMPLES.

Required the moon's place in the ecliptic at the following hours on the annexed days:

January 20, five in the evening—February 14, ſix—March 9, ſeven—April 22, eight—May 19, nine—June 8, ten—July 18, eleven—Auguſt 27,

---

* Found thus by the rule of proportion: As 24 hours : 12 deg. 47 min. :: 9 hours : 4 deg. 47 min.

September 29, one in the morning— two—November 26, three—Decem- r in the morning.

ROBLEM XCIII.

Moon's Place in her Orbit for any given Day or Hour.

er place in the ecliptic by the preceding , and her latitude for the given day in meris : then count ſo many degrees among allels or circles of latitude in the zodiac, bove or below the ecliptic, as her latitude h or South, and that will be the point repreſents the true place of the moon for opoſed time. Thus on the 10th of May her place at nine o'clock at night was found e laſt Problem to be in 20 deg. 5 min. of o, and her latitude by the ephemeris for the day was 3 deg. 10 min. North : this then is ctual ſituation of the moon for that time, may be denoted by fixing upon the exact her aſtronomical character taken from the r-Plate Print given with the globes, when are purchaſed, or a ſmall patch.

EXAMPLES.

quired the moon's place in her orbit at the and on the days given in the laſt Problem ?

PROBLEM

For a day before, and a day after
time, look in an ephemeris for the
in the ecliptic, and her latitude;
correſponding points of the glob
black patches; over theſe lay the
altitude, which, in this poſition,
preſent the moon's way for that t
ſequently ſhew what ſtars lie in, or

EXAMPLES.

Suppoſe on a given day the place
were found to be in 1 deg. of Gemi
tude 5 deg. South; on the precedin
of Taurus, with lat. 5 deg. 15 mir
on the ſucceeding day 13 deg. of
latitude 5 deg. 10 min. South; tl
nating theſe ſeveral ſituations of th

he names of the ſtars which the moon
ır or over at the vernal and autumnal
and the ſummer and winter ſolſtices;
their commencement to be taken from
hemeris?

PROBLEM XCV.

e *Moon's Declination for any given Day or Hour.*

the moon's place in her orbit for the pro-
time, and bring it in contact with the
meridian: then the arch of the meridian,
ned between the moon's place and the equi-
al, will be the declination required.

EXAMPLES.

Vhat is the moon's declination at noon on the
h of January 1797;—Anſ. The moon's longi-
e being on that day 14 deg. 59 min. of Virgo,
l her lat. 5 deg. 2 min. North, her declination
l be 10 deg. 33 min.

equired the moon's declination on the follow-
days at noon: Feb. 14—March 8—April 23—
y 2—June 11—July 1—Auguſt 27—Sept. 16—
. 22—Nov. 17—Dec. 11.

N. B. By this Problem, thoſe places on the
th may be found to which the moon will be
rly vertical on any particular day; for having
ained her declination for the propoſed time, and
rking the ſame point or number of degrees
n the braſs meridian of the terreſtrial globe,
is only neceſſary to turn this globe a complete
revolution

revolution on its axis, and ſuch places as d the operation paſs under the ſaid mark, will the moon *nearly* in their vertex on that day.

PROBLEM XCVI.

To find the Moon's greateſt and leaſt Meridian tudes in any given Latitude; that of L for Example.

It is evident, that this can happen only the aſcending node of the moon is in the ſu ſolſtice, or 1° of Cancer; for then her gr meridian altitude will be 5 degrees gr than that of the ſun, and therefore, at Lo about 67 degrees: alſo her leaſt meridian alti correſponding with the winter ſolſtice, or Capricornus, will be 5 degrees leſs than th the ſun, and therefore only 10 degrees: the ference then of the moon's meridian altitude i degrees; whereas that of the ſun is only a 47 degrees. To find the ſun's meridian alti at any given time, ſee Problem 13, page 43

PROBLEM XCVII.

To find the Time of the Moon's riſing, culmina or ſouthing (i. e. *coming to the Meridian*) *ſetting, on any Day in a given Latitude.*

Rectify the globe for the aſſigned latitude, day of the month at noon; find, by the e meris, the moon's place in the ecliptic and latitude; upon this ſpot fix her aſtronomical r, or ſome particular mark, and revolve the e till the ſaid mark coincides with the edge he Eaſtern ſide of the horizon; then will the x ſhew the time of the moon's riſing: bring o the meridian, and the index will exhibit her thing*; and, finally, turn the moon's place the Weſtern ſide of the horizon, and the index ll point to the time of her ſetting.

---

[*] The time of the moon's being in the meridian, or thing, may be found by an eaſy arithmetical operation, as: Multiply her age (taken from an ephemeris or common nanack) by 4, and divide the product by 5, the quotient es the hour, and the remainder, multiplied by 12, the inutes.

The reaſon of this rule is, that as the moon at the change mes to the South with the ſun, or at 12 o'clock, and as ere are 30 days, nearly, from one new moon to another, nd 24 hours in a day, therefore ſhe loſes one day with nother $\frac{24}{30}$, or $\frac{4}{5}$ of an hour in the time of her ſouthing: ow the moon's age, or number of days from the change, eing multiplied by 4, the product is ſo many fifths of an hour as ſhe has loſt; which divided by 5, is reduced to hours, and the remainder, if any, multiplied by 12, will be the minutes.

Another method. The moon's age multiplied by 49 produces the minutes which, on that day, ſhe comes to the meridian after 12 o'clock; and thoſe minutes divided by 60 give the hours.

The reaſon of this operation is founded, like the preceding one, on the conſideration of the moon's motion in her orbit; coming later every day to the meridian than ſhe did the day before, ſo as to loſe a day in one lunation, which is $\frac{2}{59}$ of a day, diurnally, or nearly 49 minutes. And, as remarked above, ſhe comes, at the time of the new moon, to the meridian with the ſun, ſo on the next day ſhe arrives at the ſame point 49 minutes later than the ſun; twice 49 minutes after that luminary on the third day, &c. &c.

When the moon's age is leſs than 15 days, ſhe comes to the meridian in the afternoon: after that period in the forenoon.

The moon's mean daily motion i
10 minutes.

EXAMPLE

On the 23d of January 1797,
was 14 deg. 47 min. of Sagitt
agreeably to the above precep
that ſhe roſe at London, on
after 4 o'clock in the mornin
nearly half paſt 8; and ſet ab
after noon.

Required the time of the m
minating, and ſetting at London
days:

Jan. 4—Feb. 25—March 20—
—June 18—July 14—Aug. 18—
—Nov. 22—Dec. 19.

PROBLEM X

PROBLEM XCIX.

luſtrate by the Globe the Phenomenon of the Harveſt Moon.

bout the time of the autumnal equinox, when moon is at or near the full, ſhe riſes ſooner ſun ſetting than ſhe does in any other full n week in the year: and ſhe, moreover, riſes ſt at the ſame time for ſeveral nights toge- , Theſe circumſtances, with which farmers better acquainted than aſtronomers till within e few years*, were gratefully aſcribed to the dneſs of God, conceiving that he had ordered n purpoſe to give them an immediate ſupply oon-light after ſun-ſet, for their greater coniency in reaping and gathering in the fruits of earth; accordingly, they diſtinguiſh *this* full n from all the others in the year, by calling it *harveſt-moon.*

Mr. Ferguſon has given a full account of the veſt-moon in his aſtronomy; the ſubſtance of ich is as follows, in a problem on the common ſtial globe:

Make chalk-marks all round the globe, on the iptic, at 12 degrees 10 minutes from each er (beginning at Capricornus) a ſpace equal the moon's daily *mean* motion † from the ſun;

---

* The firſt perſon, it is ſaid, who attempted to account this phenomenon was Mr. Johnſon, in his Queſtiones loſophicæ. The ſecond edition of that little manual was liſhed in 1735.

† The moon's mean diurnal motion is 13° 10', but as ſun moves nearly 1° in the ecliptic daily, the moon re-s from the ſun only 12° 10' in the courſe of a day or hours.

of the ecliptic make very different a horizon, as theſe parts ſeverally riſ and conſequently, in equal times, portions of the ecliptic will be elev horizon. About Piſces and Aries, chalk-marks will riſe in little m hours, as meaſured by the motion o the horary circle: but about the Virgo and Libra, the index will hours in the time that ſeven marks intermediate ſigns will more or le theſe differences as they are more from thoſe above mentioned.

Hence it is plain, that when t Piſces and Aries, the difference of be little more than two hours in ſe in Virgo and Libra it will be eight days; and this happens every mont becauſe the moon goes through all t ecliptic in a month, or rather in ab

The moon is always oppoſite to

›n; but her riſing is not then taken
ıuſe the ſun is above the horizon.

the moon is in Piſces and Aries
e of her change; and then, as ſhe
t, and riſes with the ſun, her riſing
eived.

the moon is in Piſces and Aries
e of her laſt quarter; and then, as
ecreaſe, and riſes not till midnight,
rally paſſes unobſerved.

eſt, the moon is full in Piſces and
gns, as we have before obſerved,
to the ſun in our autumnal months),
ı after ſun-ſet for ſeveral evenings
vhich makes her regular riſing very
that time of the year.

always be the caſe if the moon's
e plane of the ecliptic; but as ſhe
bit which makes an angle of about
h the ecliptic, and croſſes it in the
points called the nodes, her riſing
es and Aries will ſometimes not
ı hour and forty minutes through
even days; and at other times, in
ſigns, ſhe will differ three hours
the time of her riſing in a week,
he different poſitions of the nodes
o theſe ſigns; which poſitions, as
ed in a former part of this work *,
changing, becauſe the nodes go
ugh the whole ecliptic in 18 years

tion of the nodes will cauſe the
to go through a whole courſe of

---

* Page 313.

the *moſt* and *leaſt* beneficial ſtates, with reſpect to the farmers, every nineteen years. A table exhibiting theſe variations, from the year 1751 to 1861, is inſerted in the Cyclopædia, art. Moon. The year 1792 was one of the leaſt beneficial, and the year 1802 was one of the moſt ſerviceable.

OF THE SOLAR SYSTEM.

A FAMILIAR EXPLANATION OF THE PLANETARY OR SOLAR SYSTEM.

TH' expanded ſpheres, amazing to the ſight,
Magnificent with ſtars and globes of light;
The glorious orbs which heav'ns bright hoſt compoſe;
Th' impriſon'd ſea that reſtleſs ebbs and flows;
The fluctuating fields of liquid air,
With all the curious meteors hovering there;
And the wide regions of the land—proclaim
The POWER DIVINE that rais'd the mighty frame.
BLACKMORE'S CREATION.

The univerſe, throughout all ſpace, is repleniſhed with ſyſtems or worlds of different bodies. By a ſyſtem is meant a number of bodies which move around one centre. Such a ſyſtem is what we call the *world*; and the moving bodies of theſe ſyſtems we call *planets*[*] or *comets*[†], which, together with

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[*] The name planet is a Greek word ſignifying "wanderer;" the planets being erratic bodies continually changing their places.

[†] From *cometa*, Latin, or from a Greek word denoting the hair: a hairy ſtar.

re termed the SOLAR SYSTEM. Under
ination of planets are compriſed, MER-
ENUS, the EARTH, MARS, JUPITER,
, and the GEORGIUM SIDUS, or HER-
The bodies which we term comets are
numerous, but their number is not yet
d[*]. Beſide theſe, there is an inferior
odies in the ſolar ſyſtem, which move
larger, and they are called either *ſatel-*
ons, of which our own only is viſible to
it a teleſcope. The ſolar ſyſtem is, in
nt to our great Engliſh aſtronomer, ſome-
ed the NEWTONIAN SYSTEM. Agree-
is ſyſtem, which alone ſolves the appear-
he celeſtial bodies, the above-mentioned
volve round the ſun as the centre of their
and from him receive light and heat;
mſelves dark, opaque, ſpherical bodies,
inherent luſtre, and ſhining only by
ed light of this great luminary.

> r as to their fountain other ſtars
> ring, in their golden urns draw light,
> ence the morning planet gilds her horns.
> s magnetic beam he gently warms
> niverſe; and to each inward part,
> gentle penetration, though unſeen,
> s genial virtue even to the deep.
>
> MILTON.

THE SUN.

n is of a ſpherical form; its diameter is
3,000 miles; its circumference about
miles, and its bulk upwards of 1,000,000

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[*] See Arith. Queſt. Art. Comets.

formed of different degrees and i indefatigable inveſtigator of the h mena has moreover aſſigned very for concluding, that the opinion ceived of the ſun's being a body of and erroneous. That the ſun is not an igneous body has been t probable by other modern ph opinion to which every new ſte gives greater ſupport ; and an in a gentleman of acute penetrat conſidered the ſubject with the gr contains ſome very curious and ſa of it *.

The ſun, although the fixed ce tem, has two motions ; one roun which, as appears by obſerving th ſurface, is completed in about t and another in a circular direction mon centre of all the planetary mot

——————O SUN!
of ſurrounding worlds! in whom beſt ſeen
es out thy Maker!——————
by thy ſecret, ſtrong, attractive force,
ith a chain indiſſoluble bound,
ſyſtem rolls entire.————
RMER of the planetary train!
out whoſe quick'ning glance their cumbrous orbs
e brute unlovely maſs, inert and dead,
not, as now, the green abodes of life!

THOMSON.

THE PLANET MERCURY.

ercurius neareſt to the central ſun,
oes in an oval orbit circling run:
ut rarely is the object of our ſight,
ſolar glory ſunk and more prevailing light.

BLACKMORE.

is planet, as above ſtated, is of all others ſt to the ſun; from which, however, its ce is 37,000,000 of miles; its diameter is miles, and its bulk thirty times inferior to of our earth. It performs its revolution the ſun in about 88 days, and the year to habitants is not quite three of our months. all the planets are inhabited is from analogy mely probable; and though the heat of this be ſeven times greater than that of our *torrid* the animals and vegetables are no doubt rtionably tempered by omnipotent wiſdom dure it, the Creator having adapted the in- ants of each planet to their reſpective ſitua- . Being carried round the ſun with the very motion of 105,000 miles an hour, Mercury onſidered by mythologiſts as the meſſenger gods. See page 147.

THE

THE PLANET VENUS.

With pureſt ray
Sweet Venus ſhines; and from her genial riſe,
When day-light ſickens till it ſprings afreſh,
Unrival'd reigns the faireſt lamp of night.
THOMSO

Venus, the brighteſt of all the planets, is conſtant attendant on the ſun, from whom ſh never removes above 48 degrees, and conſequentl is never ſeen at midnight, nor in oppoſition t that luminary, being viſible only for three o four hours in the morning or evening, accordin as ſhe is before or after the ſun. When ſhe riſe before him in the morning, ſhe is called PHOSPHORUS, or LUCIFER, or the MORNING STAR when ſhe ſets after him in the evening ſhe i denominated HESPERUS, or VESPER, or th EVENING STAR*.

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* Inſtances of this occur in the writings of the ancient and in thoſe of our own poets, particularly in ſeveral par of Paradiſe Loſt.

Venus retains each of theſe names in its turn about 290 day

Friend to mankind, ſhe glitters from afar,
Now the bright evening, now the morning ſtar.
BAKE

Her lovely beams adorn
As well the dewy eve, as opening morn.
BLACKMOR

Shakeſpeare calls the morning ſtar the unfolding ſtar:

"Look! the unfolding ſtar calls up the ſhepherd."
MEASURE FOR MEASUR

And Milton, ſpeaking of the evening ſtar, ſays,

The ſtar, that bids the ſhepherd fold,
Now the top of heaven doth hold. COMUS

Now

ſtill evening on; and twilight grey
ſober livery all things clad;
s pleas'd: now glow'd the firmament
d ſapphires: HESPERUS, that led
' hoſt, rode *brighteſt*; till the moon
clouded majeſty, at length,
: queen, unveil'd her peerleſs light,
: the dark her ſilver mantle threw.

MILTON.

ras * is ſaid to have been the firſt perſon
vered that Heſperus and Phoſphorus were
ıe ſame ſtar. It is, we believe, univer-
oſed, that to this beautiful celeſtial object
udes, chap. xiv. ver. 12.

nean diſtance of Venus from the ſun is
9 millions of miles; her magnitude is
the ſame as the earth's; her periodical
ound the ſun is completed in about 225
ıer diurnal motion on her axis is performed,
ng to the lateſt obſervations, in 23 hours
minutes; and ſhe moves at the rate of
miles an hour.

'thagoras was one of the moſt diſtinguiſhed philoſo-
antiquity. The learned are greatly divided con-
he time and place of his birth; but it ſeems pretty
' believed, that he was a native of Samos, an iſland
rchipelago, though ſome ſay he was born at Sidon:
ſhed about 500 years before Chriſt, in the time of
the laſt king of Rome. His belief of the metemp-
or tranſmigration of ſouls, cauſed Pythagoras and
wers to deny themſelves the uſe of fleſh, and to be
y merciful to animals of every deſcription. After
ı of this famous ſage, his diſciples paid the ſame
› him as was paid to the immortal gods; they erected
n honour of him, appealed to him as a deity, and
his name.

This beautiful planet poſſeſſes ſo remarkabl
ſuperior a brightneſs, that ſhe was formerly
for a comet, and ſometimes appears eve
noon-day.

> “ No ſtars beſides their radiance can diſplay
> “ In Phœbus' preſence, the dread lord of da
> “ Ev'n Cynthia's ſelf, tho' regent of the nig
> “ Is quite obſcur'd by his emergent light:
> “ But VENUS only, as if more divine,
> “ With Phœbus dares in partnerſhip to ſhine.

Venus, as well as Mercury, is ſometimes
to tranſit the ſun's diſk, in form of a dark
ſpot. Theſe tranſits of Venus happen but ſel
the firſt that was ever obſerved, was ſee
our countryman, Jeremiah Horrox*; two
occurred in the laſt century, namely, o
1761, and the other in 1769; there will
happen another until the year 1874.

THE EARTH.

After Mercury and Venus, in the ſolar ſy
comes the Earth.

> More diſtant ſtill our Earth comes rolling on,
> And forms a wider circle round the ſun;
> With her the moon, companion ever dear!
> Her courſe attending through the ſhining year
> BA

The globe which we inhabit is a planet
ſpherical form ‡, moving round an axis

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[*] See Chron. Tab Nov. 24, 1639.

[†] See page 303, &c. &c.

[‡] This is demonſtrated by its ſhadow in eclipſes
moon being bounded by a circular line; by the man

alſo round the ſun. It revolves round
365¼ days, which conſequently form
This is its annual motion: the other,
called its diurnal motion, is performed
s, and conſtitutes day and night *. The
rſed by the earth, which, in aſtronomi-
ge, is called its orbit, appears to be
e ſun; and therefore, at any time to
ſun's place in the heavens, aſtronomers
ded the whole circle of the earth's mo-
360 equal parts, which they term *degrees*,
thirty of theſe a *ſign*, of which laſt
twelve †. The orbit or path of the
alled the ecliptic ‡. The orbit of the
g oval, it muſt at ſome times approach
the ſun than at others, and muſt like-
the ſame reaſon, take more time in
rough one part of its path than another;
tly, the earth is longer in traverſing one
the other of its orbit. The rotation
th is more rapid in the winter than in
er by eight days; but although in winter
earer to the ſun, yet in that ſeaſon it
theſt from us, and the weather is more
inclement. Of which phenomena the
count is, that, as the ſun's rays falling
ctly on us in ſummer, augment the heat
eaſon; ſo, being tranſmitted more ob-
our parallel during the winter, they
he cold, and render it more intenſe.

ls at a diſtance, their ſummits being viſible when
are intercepted by the horizon; and, laſtly, by
voyages which have been made round it. See
ſt. Art. Annual Revolution of the Earth.

* See pages 5 and 72.

† See pages 8, 9, 113, &c. &c.

‡ See pages 7, 8, 9.

The mean diſtance of the earth from the ſun is about 108 millions of miles *; it travels at the rate of 68 thouſand miles an hour; and its circumference is 25,020 miles.

THE PLANET MARS.

Mars is the firſt of the four ſuperior planets, his orbit being immediately beyond that of the earth.

> In larger circuit rolls the orb of Mars,
> Guiltleſs of ſtern debate, and waſteful wars,
> As ſome have erring taught: he journies on,
> Impell'd and nouriſh'd by the attractive ſun;
> Like us, his ſeaſons and his days he owes
> To the vaſt bounty which from Phœbus flows.
> BROWN.

The diſtance of Mars from the ſun is computed to be about 144 millions of miles; he moves at the rate of 55,000 miles an hour; completes his revolution round the ſun in 687 days, and performs his diurnal rotation upon his axis in about 24 hours and a half; of courſe his days and nights are nearly of the ſame length as ours. Being nearly half as far again from the ſun as our earth is, his light and heat are not half ſo much as our own.

Mars is diſtinguiſhed by a red and fierce complexion; which proceeds either from the matter of the planet, or from a very thick atmoſphere. He walks his round in eternal ſolitude, and is the only planet above Venus that traverſes the heavens deſtitute of attendants.

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* See Chron. Tab. Ed. 3d. Art. Venus, tranſit of.

ology is the god of war. There
this name. The original Mars,
cribed the invention of arms, and
ging troops in order of battle, is
een Belus, king of Babylon; called
Nimrod, and mentioned as a mighty
e the Lord. He firſt exerciſed his
ſt wild beaſts; but ſhortly afterwards,
tranſition, employed them in hunting
an, and reducing him to ſubjection.

Nimrod firſt the bloody chace began,
hty hunter, and his prey was man.
POPE.

t monuments generally repreſent Mars
e figure of a man extremely robuſt, armed
elmet, a pike, and a ſhield. He is ſome-
aked, but at other times wears a military
nd a cloak. Sometimes he is repreſented
riot guided by Bellona (a warlike divinity,
buſineſs it was to prepare his horſes and
when he departed for battle), drawn by
ſes, the names of which were *Terror* and
on his breaſt-plate are the figures of many
s; and the poets add, that Fury and Indig-
at perched upon his helmet, and that Fame
announced his approach. Mars had ſeveral
at Rome. Auguſtus, after the battle of
*, erected a moſt magnificent one to him,
e name of *Mars the Avenger*.

* See Arith. Queſt.

THE

Next Jove, prodigious plane
His orb preſents of huge amaz

His diſtance from the ſun is
490 millions of miles; his ann
the ſun is performed in nearly t
and he moves in his orbit at
miles an hour. The rotation
his axis being performed in abo
of courſe, a rapid alternation

He ſwiftly on his axle turn'd
The frequent aid of day to wa

Jupiter is enlightened by
moons, each of them larger t
we are ſupplied.

Four ſecond planets his domi

n the heathen mythology, was the
ful of all the gods. He was educated
n Mount Ida, in Crete, and fed upon the
ne goat Amalthea *, or, according to
on honey. The worſhip of Jupiter was
and ſurpaſſed that of the other gods in
. He is generally repreſented as ſitting
olden or ivory throne, holding in one
nderbolts juſt ready to be hurled, and in
r a ſceptre of cypreſs. His looks expreſs
, his beard flows long and neglected, and
le † ſtands with expanded wings at his feet.
had ſeveral oracles ‡, the moſt celebrated
of

ee Capricornus, page 130.

See Aquila, page 170.

The word oracle denotes either a pretended anſwer of
gods to the queſtions of men, or the place where thoſe
ers were given. Nothing is more famous than the ancient
les of Egypt, Greece, and Rome. They were conſulted,
only in every important matter, but even in the affairs of
ate life. It is a queſtion among the learned, whether the
les were given by the inſpiration of evil ſpirits, or
ther they proceeded ſolely from the artful impoſture of
juggling prieſts of falſe divinities. That bribery and
uption often prevailed in the oracular temples, is a well
wn fact. Alexander thus obtained a favourable anſwer;
to the will and pleaſure of his father Philip the oracles
reece were moſt ſervilely ſubſervient, as is amply teſtified
emoſthenes. Many of the leading men and philoſophers
g fully appriſed of the deceit, regarded with ineffable
empt the reſponſes of intereſted prieſts, whom money
d beguile and courtly interpoſition ſilence. Such, how-
, was the ſottiſh ſuperſtition of the maſs of the people,
icularly in Egypt, that they blindly acquieſced in the
ſition of their prieſtly directors, who perſuaded them
the ſafety and happineſs of their lives depended upon
mere motions of an ox or the tameneſs of a crocodile!!
men, however, became better inſtructed, by the lights
which

of which were at Dodona in Greece, and A
in Lybia, in Africa. As he was the kin
father of gods and men, his power extende
the deities, and every thing was ſubſervi
his will, except the Fates*. From him ma
received their bleſſings and their miſeries
they conceived him to be acquainted with
thing paſt, preſent, and future.

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which philoſophy introduced into the world, the re
of oracles inſenſibly declined; and in the fourth c
when Chriſtianity began to triumph over Paganiſm
entirely loſt their credit. But how much ſoever oracl
decried, and how much ſoever the roguery of their
was expoſed, yet bold impoſtors in ſome way or other ſtil
eaſy dupes, and the groſſeſt cheats continued ſucceſsf
gull the credulous many. The bulk of mankind, ſ
elegant modern author, being ignorant and credulous, c
throughout their lives in a ſtate of childhood, and hav
the dupes of prieſts and politicians in all ages and
countries of the world. As a proof of their ignorar
credulity he adduces their belief in the fictions of
witchcraft, hobgoblins, apparitions, fairies; in the in
of ſtars on human actions, in miracles wrought by th
of ſaints, in the flight of ominous birds, in the pred
of the bowels of dying animals, in the expounders of d
in fortune-tellers, in conjurers, in modern prophets,
cromancy, in chiromancy, in animal magnetiſm, w
endleſs variety of folly †. The peruſal of this lam
catalogue of human weakneſs cannot fail to excite
breaſt of every reader who is intereſted for the dignity
ſpecies, an ardent wiſh that the period may ſpeedily
when fair Science, by her divine influence, ſhall effac
the earth every veſtige of ignorance and ſuperſtition.

† Darwin's Zoonomia.

* The Fates, or Parcæ, in mythology, were three
ful goddeſſes, the inexorable arbiters of the life and d
mankind, and from whom immediately proceeded wh
good or evil befel them in the world.

: places at which Jupiter was worſhipped
, or Malta ; and Grotius, Dr. Whitby,
minent biblical critics, think that the
ook the apoſtle Paul for this fictitious
en they ſaid he was a god, though a
efore they had raſhly concluded that he
rderer *. The fickleneſs of the giddy
g multitude has ever been proverbial,
es and in all countries :

iſcellaneous rabble who extol
ngs vulgar ——————
ey praiſe and they admire they know not what,
d know not whom, but as one leads the other.
MILTON.

hey follow fortune ; and the common cry
s ſtill againſt the rogue condemn'd to die.
JUVENAL.

he mob at Lyſtra one moment were impatient
ffer ſacrifice to the apoſtle Paul, as a god ; and
next to ſtone him to death. See Acts xiv.
d our Art. Mercury.

THE PLANET SATURN.

Still further off, ſcarce warm'd by Phœbus' ray,
Thro' his wide orbit, Saturn wheels away.
How great the change could we be wafted there,
How ſlow the ſeaſons! and how long the year!
BAKER.

The long-reputed boundary of the ſolar ſyſtem, if we except the cometary orbits, is the path of the planet Saturn, his diſtance from the ſun being

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* See Acts xxviii. 4—6.

aſcertained by Dr. Herſchel, i
minutes.

Saturn has ſeven ſatellites, o
upon him, and is remarkable
circle that ſurrounds him, com
ring; the diſtance of which
uſually ſtated to be about 21,
breadth nearly 30,000. The c
of this ſingular phenomenon ar
is ſuppoſed to ſupply light and
agreeably to the obſervation
evinced an extenſive acquaintanc

Muſe! raiſe thy voice, myſteri
How o'er the copious orb a lu
Opake and broad, is ſeen its a
Round the big globe at ſtated
Perhaps (it's uſe unknown) wi
To aid the regions of that geli
The want of nearer Phœbus to
And warm with reflex beams h
Elſe might the high plac'd wor

mſelf in civilizing the barbarous man- people, and in teaching them ſeveral iculture, and many of the uſeful and . His reign was ſo mild and popular, :nt and virtuous, that mankind have ıe *golden age*, to intimate the happineſs uillity which the earth then enjoyed. is generally repreſented as a decrepit old atly bent in his body through age and :s. He holds a ſcythe in his right hand, :rpent that bites its own tail, which is an of time and of the revolution of the year. eft hand he holds a child, which he raiſes he meant to devour it: alluding to his deſtroyed ſeveral of his own children. On :nes were uſually hung fetters, in memory chains that he had himſelf worn when im- ed by Jupiter. Feſtivals, called Saturnalia, celebrated at Rome, in honour of Saturn, ımmemorate the freedom and equality which iled on earth during his reign.

THE PLANET GEORGIUM SIDUS, OR HERSCHEL.

ıis ſeventh primary planet was firſt diſcovered, iſt to be a planet[*], by Mr. Herſchel[†], and

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[*] The Georgium Sidus is by ſome ſuppoſed to be the ſtar in Mayer's Catalogue, and was ſeen by him on the ıf September 1756.

[†] Mr. Herſchel, for his important additions to the ſtock national knowledge, has ſince received from the Uni- of Oxford the degree of a Doctor of Laws; which is ore creditable, as that learned body is very ſparing of demic honours upon perſons who have not been educated ı its walls.

called

Matheſis with uplifted eye,
Tracing the wonders of the ſk
Beholds new conſtellations ri
New ſyſtems crowd the argen
Views with new luſtre round th
Wide his ſtupendous orb the *Ge*

By moſt foreign, and even by
loſophers, it is, however, know
Herſchel; and it is indeed eviden
appellation is not only more app
this honour is juſtly due to the inge

* Dr. William Herſchel is a native
was born November 15, 1738, and wa
father's profeſſion, which was that of a
in London in the year 1759; but, fin
ſucceeding to his wiſh in the metropoli
the country; and his merit procured hi
organiſt to a church in Halifax: he was
in the ſame capacity in the Octagon Cha

nd ſingular perſeverance the
is indebted for many other
s.

l be for ever known to fame,
ound planet bear his name."

s of Berlin have given this planet
of Ouranus, or Uranus, which,
the other planets, is taken from
ology, and denotes the father of
et which has ſomething very ana-
r as Saturn's orbit includes that
Saturn has the name of Jupiter's
ems an equal propriety in calling
h is next ſuperior to Saturn, by the
s, Saturn's father.

nean diſtance from the ſun is about
s of miles; he performs a revolution
bit in 83 years and 146 days of our
magnitude is nearly 80 times larger
he earth. On account of the im-
of this planet from the ſource of
to all the bodies in our ſyſtem, it
ighly probable that he was attended
moons; and accordingly the in-
ſcoverer has already diſtinguiſhed

Dr. Herſchel is materially aſſiſted in his
ſuits by his ſiſter, Miſs Caroline Herſchel,
ſhed herſelf greatly by her application to
ly, and has communicated to the Royal
y ingenious reports of obſervations made by
ry orbs. For further particulars we refer
s to a highly intereſting work, entitled,
Characters of 1798," publiſhed by Mr.
's-Church-Yard.

ſix*, which are doubtleſs of great utilit inhabitants. In a very fine clear night, v moon is abſent, this planet may be percei good eye, unaſſiſted by a teleſcope; he like a ſtar of the fifth magnitude, of a blui colour, with a brilliancy between that c and the moon.

NEW PLANETS.

Young as is the preſent century †, it duced already the diſcovery of two new planets. The firſt of theſe called CER diſcovered on the firſt day of the preſent or the 1ſt of January 1801, by M. Piazzi

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* It may be uſeful to our young readers to corre error concerning Dr. Herſchel's celebrated teleſc ſtrument of his own conſtructing, which is length. It has been pretty generally imagined, of the Doctor's diſcoveries were occaſioned by the magnifying power of this wonderful teleſcope; tl that no ſuch large power is neceſſary, or uſeful all the Doctor's diſcoveries have been made with of from 10 to 20 feet, and with magnifying power 60 to 300. His diſcoveries are therefore to b to his laudable perſeverance, and not to the ſize o teleſcope, which is rather an object of curioſit utility. It cannot be too often inculcated upon y unvarying and unwearied attention, to any object, accompliſh great things. To a friend of the immort who complimented him upon his ſublime diſcoverie comparable genius modeſtly replied, that "if he any thing in ſcience worthy of notice, it was patient induſtry of thinking, rather than to ext ſagacity above other men."

† See Arith. Queſt. Art. Century.

‡ Hence it is ſometimes ſtyled "Piazzi," Piazzi Planet."

ner at Palermo, in the iſland of Sicily. It moves
an orbit between Mars and Jupiter, and is a
ry ſmall planet, appearing through a teleſcope
a ſtar of the eighth magnitude, its diameter
ing only 200 miles; its periodic time is about
ur years. For its other elements, ſee White's
phemeris for the current year 1803, page 7.

The ſecond was diſcovered March 28, 1802,
y Dr. Olbers, of Bremen, in Germany, who has
amed it PALLAS. This is alſo a very ſmall
lanet of about 140 miles in diameter; moves
etween Mars and Ceres, and performs its revo-
ition in about three years.

Ceres, the daughter of Saturn and Veſta, was,
n heathen mythology, the goddeſs of corn and
f harveſts:

> Firſt Ceres taught, the ground with grain to ſow,
> And arm'd with iron ſhares the crooked plough.
>
> DRYDEN'S VIRGIL.

Her beneficence to the Sicilians in particular, in
nſtructing them in agriculture*, teaching them
o make bread, and giving them ſalutary laws,
auſed her to be highly venerated in that iſland,
vhere it was the cuſtom for every man to make
n annual ſacrifice to this goddeſs according to
is ability:

> ——— To heav'n thy due devotions pay,
> And annual gifts on Ceres' altars lay.
>
> DRYDEN'S VIRGIL.

The Romans likewiſe paid her great adoration,
nd her feſtivals were yearly celebrated during

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* See Arith. Queſt. Art. Corn.

Ceres ſometimes appears de
as a country woman mounted
ox, carrying a baſket on her le
ing a hoe; at other times ſhe
garland of ears of corn on her
one hand a lighted torch [†], an
poppy, a flower that was ſacred
Pallas, in heathen mythology
of Jupiter. To her the olive tre
having originally inſtructed ma
of oil.

Inventor, Pallas, of the fat'nin
D

A branch of an olive tree wa
by thoſe who ſued for peace, as
of it [‡] and plenty:

Soft peace they figure, and ſwee

The ſecond time returning, in his bill
An olive leaf he brings, pacific ſign.

Pallas is the ſame as Minerva, whoſe functions, power, and character, we have before noticed. See page 147.

* * *

The planets are kept in a regular motion, and retained in an undeviating courſe, round the ſun, by the power of this luminary's attraction, or gravity, combining with their own projectile force. By the latter expreſſion is meant the force propelling bodies forward in a right line, which is the nature of all ſimple motion. By the former is underſtood that power which withdraws them from their rectilineal courſes.

—————— The ſun
Is centre to the world, and other ſtars,
By his attractive virtue and their own
Incited, dance about him various rounds:
Their wand'ring courſe now high, now low, then hid,
Progreſſive, retrograde, or ſtanding ſtill.

MILTON.

This wonderful celeſtial mechaniſm, which it is altogether foreign to a compendious tract to attempt explaining, was originally impreſſed on the ſyſtem by its omnipotent CREATOR; to which primary impulſe it has with undeviating uniformity adhered, having never ſuffered the ſmalleſt diminution of its elaſtic virtue from the greateſt *diſtances of ſpace*, or intervals of time!!!

With what an awful world-revolving power
Were firſt the unweildy PLANETS launch'd along
Th' illimitable void! Thus to remain,
Amid the flux of many thouſand years,
That oft has ſwept the toiling race of men
And all their labour'd monuments away,
Firm, unremitting, matchleſs in their courſe;
To the kind temper'd change of night and day,
And of the ſeaſons ever ſtealing round,
Minutely faithful: Such TH' ALL-PERFECT HAND!
That pois'd, impels, and rules the ſteady WHOLE.
THOMSON.

The Problems peculiar to the planets, though highly entertaining and uſeful, are but very few. Their ſolutions are as follow:

PROBLEM C.

To find the Place of a given Planet in the Ecliptic for any ſpecified Time.

Inſpect the ephemeris for the propoſed month, and there, oppoſite to the given day of the month, is the planet's place in the ecliptic, in the column appropriated to that planet. Thus, on November the 4th, 1797, it will be found that Saturn's place at noon was Cancer 11 deg. 54 min.—Jupiter's, Aries 11 deg. 30 min.—Mars's, Libra 12 deg. 54 min.—Venus's, Sagittarius 22 deg. 40 min.—Mercury's, Libra 25 deg. 33 min.—and the planet Herſchel's, Virgo 16 deg. 36 min.

In White's Ephemeris for the year 1797, page 32 is allotted to this planet, which is there ſtyled the Georgian, or New Planet.

Having found theſe places on the globe, ſtick the aſtronomical characters of the different planets

on

pective points of the ecliptic, and the l then be in a proper ſtate to ſolve the ; problems, for the day mentioned in em. But if rigid accuracy be expected, le of each planet muſt be ſought in the , and the patches, which are their tives, fixed above or below the ecliptic, as the latitude is either North or South, denoted in the ephemeris by the letter

PROBLEM CI.

e Time when a given Planet riſes, culmi- or ſets on a given Day of the Year, in a d Latitude.

the globe to the given latitude, and the ce at noon, on the propoſed day. Find t's place, as directed in the laſt problem, the globe till its deſignating mark comes t with the Eaſtern part of the horizon; will then ſhew the time of the planet's ring the ſaid mark to the braſs meridian, our of its culminating will be ſeen: and, urn the mark to the Weſtern edge of the and the index will exhibit the time of t's ſetting.

EXAMPLES.

e 4th of November 1797, at London, , the place of the planet Jupiter was deg. 30 min. Proceeding then, agree- he above precept, it will appear that he riſes nearly a quarter before 4 o'clock in the afternoon, culminates at ten, and ſets about half after 4 in the morning.

A ſimilar operation repeated for each of the planets, will ſhew ſuch of them as are, or are not, in a poſition to become conſpicuous on any night in the year.

Required the time when all the planets reſpectively riſe, culminate, and ſet at London, on the commencement of each of the four ſeaſons of the year, as ſtated in White's Ephemeris?

PROBLEM CII.

To find upon any given Day, in a propoſed Latitude, what Planets are above the Horizon at Sun-Set.

Adjuſt the globe to the given latitude, and the ſun's place at the noon of the given day. Bring the degree of the ecliptic then occupied by the ſun, to the Weſtern edge of the horizon, and obſerve which of the zodiacal conſtellations are at that time above the horizon. Examine an ephemeris for the given day of the month, to diſcover what planets are in any of thoſe elevated ſigns: ſuch, if the weather prove favourable, will be viſible on the evening of that day.

EXAMPLES.

On the 26th of November 1797, the ſun's place was 4 degrees 47 minutes of Sagittarius. The globe being rectified, as above directed, for a given place, ſuppoſe London, and the ſun's place

› the Weſtern ſemi-circle of the horizon, ›f the zodiac then appearing above the ill be—the greateſt part of Sagittarius, vhole of Capricornus, Aquarius, Aries, ɪs. To theſe may be added two more, Gemini and Cancer, for the planets which before midnight. Now, by examining eris, it will be found, that Capricornus, l Cancer, were poſſeſſed at that period , Jupiter, and Saturn, which of courſe le in the evening of that day.

The planets are not viſible till the ſun n number of degrees below the horizon. becomes conſpicuous when the ſun has 10 degrees—Venus, 5—Mars, 11½—10—Saturn 11—and the New Planet, ſun is 17½ degrees below the horizon.

d, what planets will be above the horizon following days, 1803, at ſun-ſet: the th-Day—the Anniverſaries of the Reſto- Gunpowder-Plot—the Prince of Wales's —the Lord-Mayor's-Day, and the King's 1.

PROBLEM CIII.

ly the Globe in what Poſition Venus is a Morning or Evening Star.

orm this problem, rectify the globe for e of the place and the ſun's ſituation in ic; ſeek the place of Venus by an , and having found the correſponding e globe, append there ſome deſignating mark,

ſtar. But if Venus be in *conje*
according to the order of the fi
in Gemini when the ſun is in T
after the ſun, and in that poſiti
evening ſtar.

The pupil ſhould be here re
conſequence of the earth's diur
from *Weſt* to *Eaſt*, the heavenl
move from *Eaſt* to *Weſt*; of cour
to the Eaſtern part of the hori
dian, and to the Weſtern part o
fore Taurus; Taurus before Gen

By examining an ephemeris t
months of the year, according t
it may eaſily be ſeen when Ven
after the ſun, and of courſe *how*
ſhe continues an evening or a m
inſtance, in White's Ephemeris,
it appears that Venus was in
ſun from January the 1ſt till M
conſequently during that period

ROBLEM CIV.

given Latitude, and on an aſſigned long Venus riſes or ſets before or after ccording as ſhe is a Morning or an 'ar.

: globe for the given latitude and e at noon; find by an ephemeris the is, and upon the correſponding part c append her aſtronomical character. at the given period, a morning ſtar, ſignating mark to the Eaſtern part of and the index will ſhew the time of evolve the globe till the ſun's place ſame ſemicircle of the horizon, and ll indicate the time of his riſing: the theſe periods is the ſpace which Venus the ſun.

e an evening ſtar on the aſſigned day, n's place to the Weſtern part of the d remark the time by the index; turn l Venus arrives at the ſame ſemicircle on, and notice the time; the difference ods is the ſpace ſhe ſets after the ſun.

EXAMPLES.

did Venus ſet after the ſun at London, 30, 1797, her ſituation being then ricornus, and the ſun's place 8°¼ in ?—Anſ. About 3 hours.

how long, in the year 1800, Venus the ſun at London, January 23—Feb.

13—

19—March 12—April 11—May 5—June 13—July 6—Auguſt 23—Sept. 12—and how long ſhe ſets after him at the ſame place on the following days: Oct. 11—Nov. 3—Dec. 17.

N. B. The pupil may aſcertain the truth of theſe operations by conſulting the ephemeris for the riſing and ſetting of the ſun and Venus on the above days.

PROBLEM CV.

How to know the chief Stars, and to find the North Pole.

If any one ſtar be known, the others may be found by conſidering firſt ſome of the neareſt ſtars that lie round it, whether they make a *triangle* or a *quadrangle*, *ſtraight lines*, or *curves*, *right angles*, or *oblique angles*, with the known ſtar. This is eaſily done by comparing the ſtars on the globe (being rectified to the hour of the night) with the preſent face of the heavens, and the ſituations of the ſtars there, as directed in Problem 85.

It is by this method alſo, that we learn to know ſome points in the heavens where no ſtar is. For example, the *North Pole*, which is eaſily found by means of Charles's Wain, *i. e.* ſeven ſtars in the conſtellation Urſa Major *. Four of thoſe ſtars in a quadrangle are ſuppoſed to repreſent a cart or waggon, *b*, *r*, *c*, *d*, in the annexed figure; and the three others the horſes. The ſtar *a* is called *Alioth*; *d* is denominated *Dubhe*; *b* and *r* are called the two *guards* or *pointers*, becauſe they point directly in a ſtraight line to the *North pole p*, which now is near 2¼ degrees diſtant from the ſtar *s*, which is called the North pole ſtar †.

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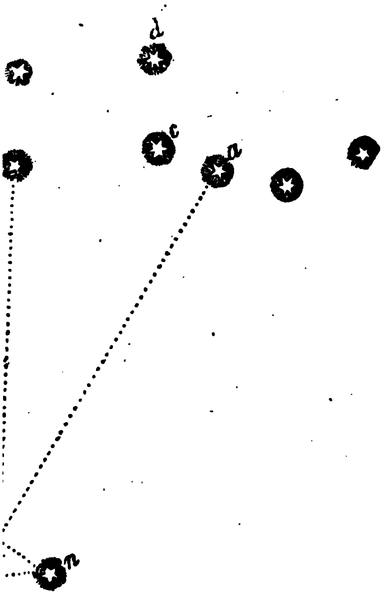
* See page 297.

† See page 140.

rth pole may alſo be found by the ſtar from which a ſtraight line, drawn to the *s*, goes through the *pole point p*, and leaves degrees diſtance from the pole ſtar. It be found by the little ſtar *n*, which is eſt ſtar to the *pole ſtar s*; for a line drawn o *s* is the hypothenuſe of a right-angled whoſe right angle is in the *pole point p*.



In the ſtudy of the Celeſtial GLOBE, uſe is made of the Greek characters. It therefore, not be improper in this Work t troduce

THE GREEK ALPHABET.

		Name.	Sound.
Α	α	Alpha	a
Β	β ϐ	Beta	b
Γ	γ Γ	Gamma	g
Δ	δ	Delta	d
Ε	ε	Epſilon	e *ſhort*
Ζ	ζ ζ	Zeta	z
Η	η	Eta	e *long*
Θ	ϑ θ	Theta	th
Ι	ι	Iota	i
Κ	κ	Kappa	k
Λ	λ	Lambda	l
Μ	μ	Mu	m
Ν	ν	Nu	n
Ξ	ξ	Xi	x
Ο	ο	Omicron	o *ſhort*
Π	π ϖ	Pi	p
Ρ	ϱ ρ	Rho	r
Σ	ς σ ς	Sigma	ſ *or* s
Τ	τ ⅂	Tau	t
Υ	υ	Upſilon	u
Φ	φ	Phi	ph
Χ	χ	Chi	ch
Ψ	ψ	Pſi	pſ
Ω	ω	Omega	o *long*.

MICAL CHARACTERS OF THE PLANETS.

urn	☿	Mercury
iter	☾	Luna (the Moon)
ars	♅	Herſchel,
l (the Sun)		the New or
enus		Georgian Planet.

nark which characterizes the planet Her-
the initial of the diſcoverer's name, inter-
by a croſs bar to repreſent a croſs, thereby
iote that the diſcovery of the planet took
after the birth of Chriſt.

A
NOLOGICAL TABLE
OF

t or remarkable Events that have hap-
on the ſeveral Days introduced in the
ng Work.

JANUARY.

. WILLIAM the Conqueror was crowned at Weſtminſter.
. Charles II. was crowned at Scone, Perth-
re, Scotland.
Ovid expired at Tomi, near Varna, on the
ck Sea.
B. C. Cicero, the Roman orator, was born.
. Expired Roger Aſcham: he was born
r Northallerton.
. Prince Eugene, of Savoy, arrived in
gland.
. Onore, South of Bombay, was taken by
Engliſh.
. Catharine of Arragon died at Kimbolton,
ntingdonſhire.
. Calais ſurrendered to the French.
. Galileo the aſtronomer died near Florence.
. A great ſum was collected for the Ame-
an priſoners.
. Laud, Archbiſhop of Canterbury, was
headed on Tower-hill.
. Peter the Great arrived in England.

JAN. 11, 1753. Expired Sir Hans Sloane, at Chelſea.

12, 1519. Died Maximilian I. Emperor of Germany.

13, 1790. Monaſtic eſtabliſhments were ſuppreſſed in France.

14, 1792. Died Joſeph Jackſon, a celebrated letter-founder.

15, 1559. Queen Elizabeth was crowned at Weſtminſter.

16, 1780. Admiral Rodney defeated the Spaniards near Cape St. Vincent, in Portugal.

17, 1792. Died George Horne, Biſhop of Norwich.

18, 1719. Expired Sir Samuel Garth, a poet and phyſician.

19, 1728. Died William Congreve, a dramatic writer.

20, 1790. Died at Cherſon, John Howard, the philanthropiſt.

21, 1793. Louis XVI. was beheaded at Paris.

22, 1561. Gave birth to Francis Bacon, Viſcount St. Alban's.

23, 1570. The Earl of Murray was ſhot at Linlithgow.

24, 76. The Emperor Adrian was born at Rome.

— 1793. The King of Pruſſia took poſſeſſion of Thorn.

25, 1776. The American Congreſs ordered a monument for General Montgomery, who was ſlain at Quebec, December 31, 1775.

26, 1799. The King and Queen of Naples landed at Palermo.

27, 1795. A proclamation was iſſued at the Hague, demanding a ſupply of clothes, &c. for the French troops.

28, 1547. Expired Henry VIII.

— 1725. Peter the Great died at Peterſburgh.

29, 1795. The Turkiſh Ambaſſador made his public entry into London.

30, 1649. Charles I. was decollated at Whitehall.

31, 1796. The daughter of Louis XVI. arrived at Vienna.

FEBRUARY.

FEBRUARY.

1702. Marſhal Villeroy was taken priſoner t Cremona, in Italy.

96. William Borlaſe was born at Pendeen, in Cornwall.

60. General Monk entered London with his army.

194. Richard I. was releaſed from his impriſonment in Germany.

1555. John Hooper, Biſhop of Glouceſter, was burnt in that city.

1716. The Pretender embarked at Montroſe for France.

45 B. C. Cato ſtabbed himſelf at Utica.

1685. A. D. Charles II. died at Whitehall.

, 1587. Mary, Queen of Scots, was beheaded at Fotheringay.

, 1587. Mentioned by ſome Chronologiſts as the day of Mary's decapitation.

9, 1700. Daniel Bernouilli was born at Groningen.

, 1567. Lord Darnly was murdered near Edinburgh.

- 1798. The French entered Rome.

1, 1798. Staniſlaus Poniatowſki, late king of Poland, died at Peterſburgh.

2, 1554. Lady Jane Grey and her huſband were beheaded in the Tower.

3, 1732. Died in exile at Paris, Francis Atterbury, Biſhop of Rocheſter.

4, 1779. Captain Cook was killed at Owyhee, one of the Sandwich-Iſlands.

- 1797. Sir John Jervis defeated the Spaniards off Cape St. Vincent, in Portugal.

5, 1708. Died at Hereford, John Philips, an admired poet.

6, 1796. Amboyna, near Ceram, in the Eaſt-Indies, capitulated to the Engliſh: its produce is nutmegs.

FEB. 17, 1571. An earthquake removed M
hill, in Herefordſhire.

18, 1478. The Duke of Clarence was drow
the Tower.

— 1653. Commenced a famous engagem
tween the Engliſh and Dutch, off Po
Iſland, Dorſetſhire.

19, 1593. Prince Frederick, ſon of James
born at Stirling.

20, 1712. The marriage of Peter the Great
celebrated Catherine was ſolemnized at
burgh.

— 1792. The Emperor of Germany ex
Vienna.

21, 1797. The iſland of Trinidad was taken
Engliſh.

22, 1797. Twelve hundred French troops l
Fiſhguard-bay, Pembrokeſhire.

23, 1792, Expired Sir Joſhua Reynolds, an
painter.

24, 1303. The Scots gained three victories
Engliſh at Roſlin, near Edinburgh.

— 1500. The Emperor Charles V. was
Ghent.

— 1525. Francis I. was taken priſoner at

25, 1601. Robert, Earl of Eſſex, was behe

26, 1797. The Bank was prohibited from co
to pay in ſpecie.

27, 1706. Expired John Evelyn, an eminen
ſopher.

— 1792. The Houſe of Commons in Dub
burnt.

28, 1447. Humphrey, Duke of Gloucest
murdered at St. Edmundſbury.

— 1582. Died at Edinburgh, George Buch
celebrated hiſtorian.

— 1760. Thurot was killed near the Iſle o

29, 1691. Edward Cave was born at New
Warwickſhire.

MARCH.

Martial was born at Bilbilis, now
in Spain.
pired, at London, the Rev. John

iomas Otway was born at Trotton, in

pired Robert Adam, an eminent ar-
born at Kirkaldy, 1728.
ıe Americans prepared to take poſſeſ-
ıe heights adjacent to Boſton.
ed Dr. Thomas Auguſtine Arne, an
compoſer of muſic.
ince Charles, ſon of James I. arrived
id.
venty-ſhilling notes were iſſued by the
England.
illiam III. expired at Kenſington-

zzio, a native of Turin, was aſſaſſinated
ɪurgh.
xpired John, Earl of Bute.
ıe Duke of Clarence was buried at
ɪury.
ing James II. landed at Kinſale, in the
f Ireland.
he New Planet, or Georgium Sidus,
covered. See page 341, &c.
dmiral Byng was ſhot at Portſmouth.
Julius Cæſar was aſſaſſinated at Rome.
D. Columbus returned to Palos, in
ſia.
uſtavus III. King of Sweden, was
ted at Stockholm.
he Britiſh troops evacuated Boſton, in
ıgland.
rancis I. recovered his liberty. See
, 1525.

MAR. 19, 1668. Sir John Denhar
poet, died in London; he was
20, 1413. Henry IV. died at Weſtn
21, 1556. Cranmer, Archbiſhop of
burnt at Oxford.
22, 1740. Porto Bello ſurrender
Vernon.
23, 1794. The Ruſſian troops evacu
24, 1603. Queen Elizabeth expired.
25, The Annunciation, or Lady-Day
— 1736. Don Ulloa arrived at G
America.
26, 1756. Expired Dr. Gilbert We
27, 1625. James I. died at Theobal
28, 1766. Happened a dreadful eru
Veſuvius.
29, 1461. Was fought the battle
Yorkſhire.
— 1792. Died the King of Sweden
of this month.
30, 1282. The Sicilian Veſpers.
31, 1596. Des Cartes was born a
Touraine.

APRIL.

APR. 1, 1771. Flaxley-Abbey was d
2, 1512. Florida was re-diſcovere
Leon.
3, 33. JESUS CHRIST was crucifie
4, 1774. Expired Oliver Goldſmi
poet; born at Ferns.
5, 33. The reſurrection of JESUS C
— 1603. James I. ſet out from
take poſſeſſion of the Engliſh cr
6, 1199, Richard I. died at Chal
Limoges.

1779. Miſs Reay was murdered in Co-
it-Garden.

John, King of France, died in the Savoy
ace, London.

. Edward V. ſon of Edward IV. ſucceeded
he crown.

. Prince Eugene died at Vienna.

. King William and Queen Mary were
wned at Weſtminſter.

Admiral Rodney gained a ſplendid victory
r the French near Guadaloupe, one of the
ribbee-Iſlands.

. Expired Chriſtopher Pitt, a native of
ndford, and the tranſlator of Virgil's Eneid.

. The iſland of Tobago, in the Weſt-
lies, was captured by the Engliſh.

. Thomas Paine was elected ſecretary to
American congreſs.

. The Duke of Cumberland gained the
tle of Culloden.

. Died at Philadelphia, Doctor Benjamin
anklin, a native of Boſton.

. Expired in the Tower, the infamous
dge Jefferies.

. Died at Hackney, Dr. Richard Price.

. Londonderry was inveſted by the army
James II.

. Guadaloupe, one of the Caribbees, ſur-
ndered to the Engliſh.

B. C. Alexander the Great died at Babylon.

. Henry VII. died at Richmond, in Surrey.

. Expired, at his native town, Stratford-
on-Avon, William Shakeſpeare.

. Mary, Queen of Scots, was married to
Dauphin.

. Expired at Rome, Taſſo, the poet, a
tive of Sorrento, in Naples.

. Oliver Cromwell was born at Huntingdon.

. Ferdinand Magellan was killed in Maran,
e of the Ladrone Iſlands.

APR. 27, 1794. Sir William Jones died in the Eaſt-Indies.

28, 1772. The Counts Struenſee and Brandt were beheaded at Copenhagen.

29, 1793. Alarming accounts of the ſucceſſes of the inſurgents in La Vendée, were given in the Convention.

30, 1745. Was fought the battle of Fontenoy, near Tournay, in the Netherlands.

MAY.

MAY 1, 1672. Joſeph Addiſon was born at Milſton, near Ambreſbury, Wilts.

2, 1519. Leonardo da Vinci, an illuſtrious painter, died at Fontainbleau.

— 1536. Anne Boleyn was ſent to the Tower.

3, 1495. Columbus diſcovered Jamaica.

— 1610. Henry IV. was aſſaſſinated at Paris.

— 1655. Jamaica was captured by the Engliſh.

4, 1471. Was fought the battle of Tewkeſbury.

5, 1760. Earl Ferrers was executed at Tyburn.

6, 1667. Samuel Bochart died ſuddenly at Caen; he was a native of Rouen.

— 1757. Was fought the battle of Prague.

7, 1767. Was the natal day of the Ducheſs of York.

8, 1429. The French, headed by Joan d'Arc, compelled the Engliſh to raiſe the ſiege of Orleans.

9, 1501. Columbus ſailed from Cadiz on his fourth voyage.

10, 1671, Sir Edward Spragge deſtroyed twelve Algerine pirate ſhips at Bugia, in Algiers.

— 1775. The unfortunate Queen of Denmark expired at Zell, in Germany.

11, 1491 B. C. Pharaoh and his hoſt were drowned in the Red Sea.

The Earl of Strafford was beheaded.
John reſigned his kingdom to the
ate at Dover.
fought the battle of Langſide-Hill.
CHRIST aſcended from Mount

fought the battle of Lewes, in

fought the battle of Hexham, in
rland.
, Queen of Scots, landed at Work-
Cumberland.
William dined on board Admiral
hip at Portſmouth.
red Dr. Samuel Clarke, an eminent
n at Norwich, 1675.
Edward was murdered at Corfe-
rſetſhire.
Boleyn was beheaded at the Tower.
Engliſh gained a ſplendid naval
r the French near Cape La Hogue,
department of the Channel, France.
icus Veſputius ſailed from Cadiz on
diſcovery.
nbus died at Valladolid, Spain.
e Edward, only ſon of Henry VI.
ted at Tewkeſbury.
ought the firſt battle of St. Alban's,

Duke of Marlborough gained a
ctory at Ramillies, a few miles
amur, in the Netherlands.
rd the Black Prince landed at South-
his royal captive, John, King of

les II. arrived at Dover from his

nenced the commemoration of Han-
tminſter-Abbey.
n, the reformer, died at Geneva.

MAY 28, 1546. Cardinal Beaton was aſſaſſi St. Andrew's.

29, 1588. The Spaniſh Armada ſailed fr Tagus, in Portugal.

30, 1431. Joan d'Arc was burnt alive by gliſh, at Rouen.

— 1498. Columbus ſailed from St. Lu Spain, on his third voyage.

31, 1533. Anne Boleyn was crowned.

JUNE.

JUNE 1, 1794. Lord Howe obtained a ſplend over the French, in the Atlantic Oce 1,000 miles from the N. W. coaſt of

2, 1653. The Engliſh defeated the Dut North Foreland, Kent.

3, 1665. The Engliſh defeated the Harwich.

4, 1453. Alvares was beheaded at Valla

5, 1795. A dreadful fire happened at Co

6, 1780. Lord Mansfield's houſe, in Bl ſquare, was burnt by a mob.

7, 1761. Belle-Iſle, on the Weſtern coaſt was taken by the Engliſh.

8, 1376. Expired the Black Prince, buried in Canterbury cathedral.

9, 1760. Count Zinzendorf died at Ch

10, 1667. The Dutch burnt ſeveral of war near Chatham.

11, 1685. The Duke of Monmouth lande in Dorſetſhire.

— 1727. George I. expired near Oſna was interred at Hanover.

12, 1381. Wat Tyler with his mutinous appeared on Blackheath.

— 1734. The Duke of Berwick was Philipſburgh, in Germany.

JUNE 13, 1483. Earl Rivers, Gray, and Vaughan, were executed at Pontefract, Yorkſhire.

14, 1645. Was fought the battle of Naſeby, in Northamptonſhire.

—— 1690. King William landed at Carrickfergus, in Ireland.

15, 1744. Commodore Anſon landed at Spithead, Hants.

16, 1693. Admiral Rooke was defeated near St. Vincent's Cape, Portugal.

17, 1719. Joſeph Addiſon expired at Holland-Houſe, Kenſington.

18, 1643. Hampden was wounded in Chalgrove-Field, near Oxford.

19, 1215. Magna Charta was extorted from King John at Runney-Mead.

20, 1685. The Duke of Monmouth was proclaimed King at Taunton, in Somerſetſhire.

21, 1673. The Princeſs of Modena was married to the Duke of York, afterwards James II. at Dover.

22, 1476. Was fought the battle of Morat, near Bern.

23, 1770. Expired Dr. Mark Akenſide, a native of Newcaſtle-upon-Tyne.

24, 1494. Newfoundland was diſcovered by Cabot.

25, 1314. Was fought the famous battle of Bannockburn.

26, 1541. Francis Pizarro was aſſaſſinated at Lima, in Peru.

27, 1627. The Duke of Buckingham ſailed from Portſmouth to relieve Rochelle.

28, 1762. The late Empreſs of Ruſſia was raiſed to the imperial dignity.

29, 66. The apoſtle Paul was decapitated near Rome.

30, 1797. Richard Parker was executed at Sheerneſs.

JULY.

JULY 1, 1312. Gaveſton was put to death at Warwick.
— 1690. Was fought the battle of the Boyne.
— 1691. Athlone, on the Shannon, was taken by ſtorm.
2, 1794. A riot broke out at Catalonia, Spain.
3, 1776. The Maſſachuſett's Aſſembly united with the Congreſs in declaring the Colonies independent.
4, 1780. Admiral Geary captured twelve French merchantmen in the Weſt-Indies.
5, 1100. Jeruſalem was taken by the Cruſaders.
— 1685. The Duke of Monmouth was defeated at Sedgemoor, near Bridgewater.
6, 1189. Henry II. expired at Chinon, now in the department of Indre and Loire.
— 1415. John Huſs was burnt alive at Conſtance.
— 1553. Edward VI. expired at Greenwich.
7, 1307. Edward I. died at Burgh-upon-Sands, near Carliſle.
8, 1174. Henry II. did penance in Canterbury-Cathedral, on account of Becket's murder.
— 1709. Charles XII. was defeated at Pultowa, in the South of Ruſſia.
9, 1386. The Swiſs gained a victory at Sempach, in Lucern.
— 1735. Ulloa arrived at Carthagena, South-America.
10, 1463. The ſiege of Beauvais, North of Paris, was raiſed.
— 1584. The Prince of Orange was aſſaſſinated at Delft.
11, 1797. Charles Macklin expired, aged 96.
12, 1588. The Spaniſh Armada ſailed from the Groyne.
13, 1793. Marat was aſſaſſinated at Paris.
14, 1789. The Baſtile was deſtroyed at Paris.
— 1791. Commenced the Birmingham riots.

ULY 15, 1685. The Duke of Monmouth was beheaded on Tower-Hill.

16, 622. Mahomet fled from Mecca, his native city: he was interred at Medina.

17, 1429. Charles VII. was crowned at Rheims.

18, 1374. Francis Petrarch died at Arqua, near Padua.

9, 1333. Edward III. defeated the Scots at Halidown-Hill, near Berwick.

0, 1620. Commenced a maſſacre of the Proteſtants at Tirano, in the Valteline, Switzerland.

, 1403. Was fought the battle of Shrewſbury.

1683. Lord Ruſſel was beheaded in Lincoln's-Inn-Fields.

, 1298. Edward I. defeated the Scots at Falkirk.

1703. Gibraltar was taken by Sir George Rooke.

On this day commences the fair of Beauçaire, near Niſmes.

, 1588. Is the date of the firſt Engliſh Newſpaper.

, 1797. Admiral Nelſon loſt his right arm at Santa Cruz, in the Iſland of Teneriffe.

, 1793. Valenciennes was taken by the Duke of York.

, 1680. Died John Wilmot, Earl of Rocheſter.

, 1778. Admiral Keppel engaged the French fleet off Uſhant, on the coaſt of Finiſterre, France.

, 1797. Part of the French army entered Leghorn, in Italy.

, 1693. Was fought the battle of Landen, a few miles from Namur.

, 1768. Captain Cook ſailed from Deptford.

, 1689. The ſiege of Londonderry was raiſed.

AUGUST.

UG. 1, 1589. Henry III. of France, was murdered at St. Cloud, near Paris.

1714. Queen Anne expired at Kenſington.

AUG. 1, 1759. Was fought the battle of Minden, in Germany.

— 1798. Admiral Nelſon obtained a ſplendid victory at the mouth of the Nile.

2, 1100. William II. was ſhot in the New-Foreſt.

— 1704. Was fought the battle of Blenheim.

3, 1493. Columbus ſailed from Palos, in Andaluſia.

4, 1347. Calais was taken by Edward III.

5, 1717. Prince Eugene defeated the Turks at Peterwaradin, a few miles from Belgrade, in European Turkey.

6, 1651. Gave birth to Fenelon, the famous Archbiſhop of Cambray.

7, 1485. The Earl of Richmond landed at Milford-Haven, in Pembrokeſhire.

8, 1540. Henry VIII. married Catharine Howard.

9, 1783. Captain Wilſon was ſhipwrecked off the Pelew-Iſlands.

10, 1557. Was fought the battle of St. Quintin.

11, 1673. Dr. Richard Mead was born at Stepney.

12, 1762. Havannah, in Cuba, was taken by the Engliſh.

13, 1689. Duke Schomberg landed at Carrickfergus.

14, 1649. Cromwell took Drogheda, in Ireland, by ſtorm.

15, 1751. Mr. Blandy, of Henley, was poiſoned by his daughter.

16, Commences the annual fair of Falaiſe.

17, 1657. Died in Plymouth-Sound, the renowned Robert Blake, a native of Bridgewater.

— 1796. The Engliſh captured a Dutch ſquadron in Saldanha-Bay, near the Cape of Good Hope.

18, 1746. The Earl of Kilmarnock and Lord Balmerino were beheaded on Tower-Hill.

19, 1702. Commenced a memorable engagement between an Engliſh and a French ſquadron near St. Martha, in the North part of South-America.

AUG.

1672. De Witt and his brother were
in pieces at the Hague by a Dutch mob.
Mary, Queen of Scots, arrived in Scot-
, from France.
Was fought the battle of Boſworth-
d, near Leiceſter.
Charles I. ſet up the royal ſtandard at
ttingham.
Happened the firſt eruption of Mount Ve-
vius.
5. The brave Wallace was executed on
'ower-Hill.
8. The Duke of Buckingham was ſtabbed
ıt Portſmouth by Felton.
72. Happened the dreadful Pariſian maſſacre.
346. Was fought the battle of Creſſy.
795. Trincomale, in Ceylon, was captured by
the Engliſh.
1797. The Marquis de la Fayette was liberated
from Olmutz.
1648. The garriſon of Colcheſter ſurrendered
at diſcretion.
1689. Carrickfergus ſurrendered to Duke
Schomberg.
1793. Toulon ſurrendered to the Engliſh.
1797. Expired at Derby, Joſeph Wright, an
eminent painter.
, 70. Jeruſalem was deſtroyed by Titus.
, 1422. Henry V. died near Rouen.

SEPTEMBER.

SEPT. 1, 1715. Expired Louis XIV. King of Franc
2, 1666. Commenced the fire of London.
— 1792. A dreadful maſſacre took place at Par
3, 1650. Was fought the battle of Dunbar.
— 1651. Happened the battle of Worceſter.

SEPT. 4, 1657. Admiral Blake was buried in Weſtminſter-Abbey.

5, 1569. Died Edmund Bonner, Biſhop of London.

6, 1492. Columbus departed from Gomera, one of the Canary-Iſlands.

7, 1631. Guſtavus Adolphus defeated the Imperialiſts near Leipſic.

8, 1793. The Duke of York raiſed the ſiege of Dunkirk.

9, 1087. Expired near Rouen, William the Conqueror.

— 1513. Was fought the battle of Flouden.

10, 1796. The French army of Italy purſued the Auſtrians to Baſſano, in the diſtrict of Venice, and in ſix days took 16,000 priſoners.

11, 1745. Expired Mary Chandler, a native of Malmeſbury, in Wiltſhire, diſtinguiſhed for her talents in poetry.

12, 1683. John Sobieſki compelled the Turks to raiſe the ſiege of Vienna.

13, 1759. The heroic Wolfe was killed at Quebec, in Canada, North-America.

14, 1435. The Duke of Bedford, Regent of France, died at Rouen, now in the department of Lower Seine.

15, 1596. Cadiz, in Andaluſia, Spain, was taken by the Earl of Eſſex.

— 1613. Sir Thomas Overbury was poiſoned in the Tower.

16, 1701. James II. the abdicated King of England, expired at St. Germains, near Paris.

17, 1556. Charles V. Emperor of Germany, embarked from Holland for Spain.

18, 1709. Dr. Samuel Johnſon was born at Litchfield, in Staffordſhire.

19, 1356. Edward the Black Prince defeated the French at Poictiers, now in the department of Vienne, France.

20, 1643. Was fought the battle of Newberry, in Berkſhire, in which the amiable Lord Falkland was ſlain.

21, 1327. Edward II. was murdered in Berkeley-Caſtle, Glouceſterſhire.

558. Expired at St. Juſte, near Placentia, Eſtramadura, Spain, the celebrated Charles V. See the 17th of this month.

745. Colonel Gardiner was ſlain at Preſton-Pans, Haddingtonſhire, Scotland.

04. Oſtend, a ſea-port in Flanders, ſurrendered to the Spaniards.

601. The Spaniards landed 4,000 men near Kinſale, in the South of Ireland.

680. Expired Samuel Butler, the celebrated author of "Hudibras." He was a native of Strenſham, in Worceſterſhire.

493. Columbus ſailed from Cadiz, on his ſecond voyage to the Weſt-Indies.

777. Sir William Howe made his triumphal entry into Philadelphia.

772. Died the ingenious mechanic James Brindley.

789. Expired the benevolent and patriotic Thomas Day.

60. Died at Stockholm, Guſtavus Vaſa, king of Sweden.

795. The French National Convention decreed the incorporation of Belgium with the Republic of France.

OCTOBER.

1, 1207. Henry III. was born at Wincheſter, Hants.

780, Major André was hanged as a ſpy, at Tappon, in New-York Province, America.

692. Limerick, on the Shannon, ſurrendered to King William's forces.

792. Worms, in Germany, ſurrendered to the French.

793. The new French Calendar was preſented to the Convention.

OCT. 6, 1794. The Convention received the account of the defeat of the Auſtrians, near Juliers, in Germany.

7, 1748. The peace of Aix-la-Chapelle was concluded.

8, 1744. Admiral Balchen was loſt near Alderney, in the Engliſh Channel.

— 1789. The Ruſſians took Belgrade in Servia, Turkey in Europe.

9, 1514. Louis XII. was married at Abbeville, to the ſiſter of our Henry VIII.

10, 1794. The heroic Koſciuſko was defeated and taken priſoner near Warſaw.

11, 1797. Admiral Duncan defeated the Dutch fleet at Camperdown, South of the Texel, Holland.

12, 1492. Columbus diſcovered Guanahani, or St. Salvador, one of the Bahama Iſlands, in the Weſt-Indies.

— 1702. Sir George Rooke captured ſeveral French and Spaniſh ſhips in Vigo-Bay, Gallicia, Spain.

— 1798. Sir John Borlaſe Warren defeated a French ſquadron of ſhips off Tory-Iſland, adjacent to the N. W. part of Ireland.

13, 1399. Henry IV. was crowned, when he inſtituted the order of the Bath.

14, 1066. Was fought the memorable battle of Haſtings, in Suſſex.

15, 70 B. C. Virgil was born at Andes, a village near Mantua, Italy.

16, 1555 A. D. The renowned martyrs, Biſhops Ridley and Latimer, were burnt at Oxford.

— 1586. Sir Philip Sidney expired at Arnheim, near Nimeguen, in the United Provinces.

— 1793. The Queen of France was decollated at Paris.

17, 1777. General Burgoyne ſurrendered the Britiſh army under his command to General Gates, at Saratoga, on Hudſon's-River, in North-America.

CT. 18, 1529. Henry VIII. deprived Cardinal Wolſey of the great ſeal.

, 1769. A dreadful eruption of Mount Veſuvius took place.

1781. Lord Cornwallis and his army ſurrendered themſelves priſoners to General Waſhington, at York-Town, in Virginia.

, 1687. Lima, in Peru, South-America, was deſtroyed by an earthquake.

, 1688. The Prince of Orange ſet ſail from Helvoetſluys, in Voorn, Holland, on his expedition to this country; but was compelled by contrary winds to return into harbour. See November 1, 1688.

1707. Sir Cloudeſly Shovel and the whole of his ſhip's crew were loſt on the Scilly-Iſlands, near Cornwall.

1685. The edict of Nantz, a city now in the department of the Lower Loire, was revoked.

1642. Was fought the battle of Edge-Hill, in Warwickſhire.

, 1796. The French Directory announced that the Engliſh Viceroy, Sir Gilbert Elliott, had evacuated Corſica.

, 1154. King Stephen expired at Dover. He was buried at Feverſham.

1415. Henry V. gained the battle of Agincourt, now in the department of the Straits of Calais.

, 1751. Expired at Liſbon, whither he went for the recovery of his health, Dr. Philip Doddridge.

, 1728. James Cook, the circumnavigator, was born at Marton, in Yorkſhire.

, 900. Died Alfred the Great, a native of Wantage, in Berkſhire.

1467. Eraſmus was born at Rotterdam, in Holland.

1746. Lima, in Peru, was utterly deſtroyed by an earthquake.

, 1618. Sir Walter Raleigh was decapitated.

Oct. 30, 1736. Don Ulloa left Quito, in South-America, where he had been meaſuring a degree of the meridian.

31, 1765. The Duke of Cumberland died ſuddenly of an apoplexy.

NOVEMBER.

Nov. 1, 1688. The Prince of Orange ſet ſail a ſecond time for England. See Oct. 21, 1688.

— 1755. Liſbon ſuffered dreadfully by an earthquake.

2, 1502. Columbus entered the harbour in North-America to which he gave the name of Porto-Bello.

3, 1534. Henry VIII. had the title of Supreme Head of the Church of England conferred on him.

4, 1668. The Prince of Orange landed at Torbay, in Devonſhire.

5, 1605. The gunpowder plot was diſcovered.

— 1792. The French defeated the Auſtrians at Gemappe, near Mons, in the Netherlands.

6, 1632. Guſtavus Adolphus, King of Sweden, was killed at the battle of Lutzen, near Leipſic, in Germany.

7, 1789. Expired the Rev. Joſeph Fownes, author of "An Inquiry into the Principles of Toleration."

— 1790. Died John Thornton, Eſq. of Clapham, Surrey.

8, 1519. Cortez entered Mexico, in North-America.

— 1794. Warſaw was taken by the Ruſſians, commanded by Suwarroff.

9, 1623. Died William Camden, an eminent antiquary.

10, 1792. A decree of accuſation was paſſed againſt Monteſquieu, a French General, 11, 1572. Tycho Brahe perceived a new ſtar in the conſtellation of Caſſiopeïa.

115. The Scotch inſurgents were defeated at Sheriffmuir, near Dumblane, in Perthſhire.

002. The Engliſh maſſacred many of the Danes.

582. Henry VIII. was married to Anne Boleyn.

577. Drake ſet ſail from Plymouth on his voyage round the world.

635. Old Parr died in London, aged 152 years.

272. Henry III. died at St. Edmundſbury, in Suffolk.

558. Died the ſanguinary Queen Mary.

518. Cortez ſailed from the iſland of Cuba to conquer Mexico.

600. Charles I. was born at Dumfermline, in Scotland.

500. Columbus arrived at Cadiz from his third voyage to the New World.

759. Hawke defeated the French in the bay of Quiberon, near Belle-Iſle, France.

783. The firſt *unconfined* aërial voyage was made at Paris. Balloons were invented at Annonay, in the department of Ardeche, France, by Meſſrs. Montgolfier.

774. Lord Clive died *ſuddenly*.

1797. Mr. Pitt propoſed the Aſſeſſed Taxes.

1639. Happened the firſt tranſit of Venus ever obſerved.

739. Occurred a violent eruption of Mount Veſuvius.

1748. Expired Dr. Watts, a native of Southampton.

1703. Commenced the great ſtorm.

1788. Died the Rev. Thomas Harmer, an eminent oriental ſcholar.

1530. Cardinal Wolſey died at Leiceſter.

1330. Mortimer, Earl of March, was hanged.

1798. A day of thankſgiving for Lord Nelſon's victory. See Auguſt 1, 1798.

1700. The famous battle of Narva.

DECEMBER.

DECEMBER.

DEC. 1, 1135. Henry I. expired at St. Dennis-le-Forment, near Rouen, in France.

2, 1554. Cortez died near Seville, in Spain.

3, 1797. The Britiſh Court went into mourning for the King of Pruſſia.

4, 1745. The young Pretender entered Derby.

5, 1788. Admiral Greig was interred at Revel, in Ruſſia.

6, 1776. Rhode-Iſland, in North-America, was taken by the Britiſh forces.

7, 43 B. C. Cicero, the Roman orator, was aſſaſſinated.

— 1683. A. D. Algernon Sidney was beheaded.

8, 65 B. C. Horace, the Latin poet, was born at Venuſium, now Venoſa, in Naples.

9, 1608. A. D. John Milton was born in Bread-Street, London.

10, 1547. The Engliſh defeated the Scots at Muſſelburgh, near Edinburgh.

11, 1718. Charles XII. was ſhot in the trenches at Frederickſhall, in Norway.

— 1756. Theodore, king of Corſica, expired in Weſtminſter.

12, 1797. Dixon and Evans were executed for mutiny at Plymouth.

13, 1553. Henry IV. of France was born at Pau, now in the department of the Lower Pyrenees.

14, 1785. Died Cipriani, an Italian painter, ſettled in England.

15, 1582. The Gregorian Style was adopted at Paris.

16, 1653. Cromwell was declared Protector of England.

17, 1788. The Ruſſians took Oczakow, on the river Nieper, W. of Cherſon and N. by E. of Conſtantinople.

18, 1688. The Prince of Orange arrived at St. James's.

DEC.

19, 1793. Toulon was recaptured by the French. See Auguſt 28, 1793.

697. Died in London, the benevolent Thomas Firmin, a native of Ipſwich, in Suffolk.

The aſtronomical commencement of the winter quarter.

790. Iſmael in Beſſarabia (Turkey in Europe) was taken by the Ruſſians.

588. The Duke of Guiſe was aſſaſſinated at Blois, now in the department of Loire and Cher.

460. Was fought the battle of Wakefield, in Yorkſhire.

642. Sir Iſaac Newton was born at Woolſtrope, near Grantham, in Lincolnſhire.

1715. The Pretender landed at Peterhead, in Aberdeenſhire, Scotland.

1784. Expired at Rotherhithe, Prince Le Boo, a native of the Pelew-Iſlands, in Aſia.

1694. Queen Mary, conſort of William III. died at Kenſington.

1171. Thomas à Becket, Archbiſhop of Canterbury, was murdered in the cathedral of that city.

1680. Lord Stafford was beheaded.

1765. The Pretender died at Rome.

1668. Boerhaave, an eminent phyſician, was born at Voorhout, a village near Leyden, in Holland.

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